approach

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Vol. 3 No. 10

APPROACH welcomes letters from its readers. All letters should be signed though names will be withheld on request. Address: APPROACH Editor, U. S. Naval Aviation Safety Center, NAS Norfolk, Va. Views expressed are those of the writers and do not imply endorsement by the U.S. Naval Aviation Safety Center.

approach

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Director—RADM Allen Smith, Jr.

Head, Literature Department—CDR F. C. Moyers

Editor, A. B. Young, Jr. **Managing Editor,** LCDR W. J. Thomas
Art Director, R. A. Genders

Associate Editors: CDR J. A. Scholes; J. T. LeBarron, JOC; J. C. Kiriluk
Illustrator: R. B. Trotter

This periodical contains the most accurate information currently available on the subject of aviation accident prevention. Contents should not be construed as regulations, orders or directives unless so stated. Material extracted from Aircraft Accident Reports, (OpNav 3750-1), Aircraft FLIGA Report (3750-10), and Anymouse (anonymous) Reports may not be construed as incriminating under Art. 31, UCMJ. Names used in accident stories are fictitious unless stated otherwise. Photo credit: Official Navy or as credited. Articles may be reprinted with prior permission.

Contributions are welcome as are comments and criticisms. Address correspondence to Director, U. S. Naval Aviation Safety Center, NAS Norfolk 11, Va.

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Exhaust Deflector

Sir:

I was interested in the account of three HRS' encountering light rain and clouds at night (October Page 24) where reflection of the exhaust stack and navigation lights on the wet windshield . . . blinded the co-pilot . . .

The Air Force counterpart of the HRS was tested for its all-weather capabilities . . . and one of our findings was "at night the intermittent exhaust light caused an unsatisfactory cockpit illumination and during weather flight the flashing was easily mistaken for lightning." In WADC's T.N. WCT-53-3, we recommended "some type of device be installed to reduce exhaust flash."

It appears that action on this recommendation is still warranted, and could even have widespread application in the view of increasing weather capabilities that helicopters are obtaining.

EARLE T. BINCKLEY
Asst. Chief, Fifth Phase
Test Branch
Wright Air Development
Center

Progress is sometimes slow on both fronts. HRS production models never did get exhaust stack shields, though newer HUS/HSS models are getting them at the factory. Several commands have fabricated exhaust deflectors for the HRS and plans will be available to interested activities. —*ED*

What's My Line?

Sir:

The subject of this letter is "What's My Line?"

Having been around awhile, I observe that among our younger Naval Aviators there is a marked tendency for them to fly with the philosophy of "What's the matter? do you want to live forever?" Conversely, it seems that the older heads rely on the theory that there are no "old, bold pilots."

My concern is that, notwithstanding the continuing admonishments of the safety magazines and the safety officers, in calendar 1957

LETTERS

naval aviation lost by reason of a considerable number of pilots. The appalling rate indicates that the "message" still isn't getting across to all hands.

In addition to the government's interest because of the high cost of replacing aircraft and training pilots, there are others who have an interest in the continuance of our aviation personnel in the walking, talking group. I am one of those who has such an interest, and I would like to promote flying safety from a standpoint that death is the personalized letters of sympathy to the surviving wife and family. If the other Indians in Naval Aviation realized how overworked I am at this depressing task, they might aspire like the really foxy ones to live to be one hundred and ten and choose a more satisfying route to the Happy Hunting Ground.

—CDR, USN

It was for just such tragic reasons that an AdHoc committee was formed last fall. Though it is hoped that many of the changes recommended by that committee will pay off in reduced accidents, the problem remains a formidable one. Your statements about not laying it on the line in peacetime are not consistent with the fact that the most combat ready squadrons also seem to have the best safety records. For more on that general theme, please see Practically Tactically, page 24, and Blue Chip Play, page 22, both in this issue. —Ed.

very personal and very permanent.

There is a time and a place for everything. The time to lay it on the line is when the whistle blows and we go to war. To cut it too close before that time is strictly a waste of talent for the service, a loss of prospective "happy hours" for the pilot, and a tragic loss to those bereaved by the pilot's demise. Bear in mind that there is plenty of room on the safe side and there is absolutely no room for turning back when a pilot slices it too thin, either by design or by carelessness.

"What's My Line?" I'm the guy whose job it is to review the pilot's record after the message notification of the aircraft crash claiming his life comes in, and who writes

Wheels-Up Prevention

Sir:

You asked for suggestions re wheels-up warning devices. The random pattern counter intrigues me; it may prove better than my "pet" idea . . .

First is the matter of sensing the wheels-up landing before it happens. My proposal involves 3 normally-closed switches, in series, which are opened by these items:

Wheel position—opens when all downlock circuits are closed.

Throttle position—opens when the throttle is in the takeoff position.

Airspeed—opens when the airspeed is above the lowest speed for maximum endurance.

I believe the 3rd item is the only one which needs any explanation . . . The only time an airplane is flown, wheels-up, at a speed below that for maximum endurance is when it is accelerating, at full throttle, from takeoff to that speed, or when it is decelerating from that speed in preparation for landing.

Now comes the matter of presenting the warning of an impending wheels-up landing to the pilot. Audio systems didn't prove entirely effective; the Aero-Meds frown on shockers and jabbers. Lights and flags can be ignored (and are!)—but why? Almost entirely because the pilot is looking out the front window of his office! I, therefore, propose a nice dull black curtain to lie flat normally in the space under the fixed windscreen. This curtain would then have a (spring powered) raising device which would be triggered by the simultaneous closing of all 3 of our switches . . . It would take more than nonchalance to complete a wheels-up landing with the view ahead completely obscured.

A zip-out, or override, would take care of the unfortunate cases due to L/G malfunction or micro-switch failure wherein all three wouldn't show down and locked. A mechanical reset linked to the wheels lever would take care of the more ordinary case of the device actually functioning as a warning.

J. H. BOYUM, CDR.
ComCarAirGru Two

See next letter—Ed.

More on next page

LETTERS

Wheels-Up Preventer

Sir:

February, 1957 APPROACH covering wheels-up landings highlights more than ever the fundamental missing-link in all of our present wheels-up warning devices, i.e., the requirement of forcing a pilot to take some *conscious* action to determine that his wheels are down.

One of your pilots reports "Everything down", another "All down", still another "I wanted to see my gear indicating; so I did" . . . and so on. Not one of these pilots *could possibly* have made these "automatic" wheels reports if they were required, when turning base, to report three numbers that could be found only on the landing gear indicators in place of the present "barber's poles." Your reference to the "one-armed bandit slot machine" type counter to replace present day "barber poles" is *the* answer. If your wheels aren't down, the numbers aren't there and you've got no numbers to report, so the tower won't clear you to land. Even the Circle-Safe device referred to in the article will not prevent a pilot from "seeing" at a glance a perfect circle if he wants to; but you can't dream up numbers and report them if they aren't there without some conscious mental action.

The fifth letter same issue touches on the second fundamental error . . . Why not place a *flashing* red warning light *in his line of vision* in the aircraft rather than some place down inside the cockpit where he can't see it unless he looks for it? This would eliminate a lot of night wheels-up landings if nothing else. The suggestion has been made to BuAer but, well—.

With everyone getting all het up over wheels-up landings, why don't we really take some positive action, design wise, NOW and *push* it, and quit always ending up SAYING, "Well it's the pilot's responsibility after all".

F. H. SCHWABLE
Col, USMC
Staff, Aviation Safety Officer, Aircraft, FMFLant

Thanks, CDR Boyum and COL Schwable. Many, many excellent suggestions have been made by our readers, and forwarded to proper sources. NASC has pushed the random counter considerably, and latest word now is that BuAer is planning to purchase a sufficient number of the random counters to outfit all ADs and F9Fs at one air station for further evaluation. — Ed.

Explosive Experience

Sir:

Noted Letters to Editor in APPROACH giving idea that explosive decompression presented no real hazard. I disagree.

I flew a test early in afternoon in *Banshee*. At 30,000′ with cabin altitude about 17,000′ canopy flew open resulting in immediate decompression discomfort and momentary confusion as to what happened. After about five seconds all was well.

Later in same afternoon in *Fury* at 40,000′ with cabin at about 19,000′ same thing happened with same results. After two in one afternoon noted no ill after effects. Local night proficiency flight that same evening was cancelled when the *Banshee* I was to fly went AOCP.

Climbed in automobile to go home and backed into telephone pole which I was looking at. Passing through gate knocked transmission selector in reverse as I raised my hand to salute. Did not realize I was gripping the lever. Took a square foot of wood off the side of my spacious garage while entering same.

Next morning had flight surgeon check me. Passed assorted coordination tests with flying colors indicating that the night's sleep had fixed me up. But what would have happened if I had made that night flight?

O&R TEST PILOT

Many, many chamber tests have shown no ill effects. Maybe you would have hit the pole anyway, or maybe you were shook by the two episodes of explosive decompression (or by hitting the pole, which led to the next two errors) . . . You really should have reported to the flight surgeon after each explosive decompression, even if not planning another flight.

Please see Anymouse page 18.— Ed.

Unfeathered

Sir:

. . . Under "Letters," [Nov 1957] the writer states, in part, "Feathering the propellers prior to touchdown prevented any engine damage."

In United Air Lines we have long believed that engine damage from propellers striking the ground while in an "edge-on" feathered condition, is likely to be much more severe than if the blades are not feathered. In the latter case the blade is able to bend or fracture and absorbs more of the shock rather than transmitting it to the nose case and crankshaft.

The following is taken from the Emergency Procedures section of our DC-6/7 Flight Manual, and refers to gear up landings:

BEFORE Ground Contact	
1. Fuel system	OFF
2. Battery and generators.	OFF
3. Ignition	OFF
4. Mixture	IDLE CUT-OFF

NOTE: Do not feather propellers prior to belly landing. If propeller has previously been feathered, unfeather if feasible (after considering reason for shut-down) and allow to windmill at lowest possible RPM.

Any other comments on the subject would be most helpful.

W. E. LARNED
Manager of Flight Operations, U.A.L.
(Captain USNR, formerly C.O., VR-1, VR-11)

What's good for the goose is not necessarily good for the gander.

We agree that a non-rotating feathered propeller blade striking the ground in a near vertical position will most likely transmit a greater shock load on a nose case and crankshaft than would an unfeathered rotating blade. Furthermore, feathering props when passing over the fence must be done only after a well executed approach —it's difficult to take a waveoff with feathered props.

On the other hand, the case in question involved a TF, the utility transport version of the S2F. There have been several minimum damage occurrences in these aircraft wherein landings were accomplished with feathered props and with one or more of the landing gear struts not extended. Also there have been several occurrences and several injuries in the S2F/TF resulting from propellers shattering on striking the deck or other

objects.

A rotating prop on the right side is more likely to throw shattered shrapnel into the fuselage than a feathered prop. In any case we feel that the prime consideration should not be prevention of damage to engines, props or fuselage but the prevention of injury to pilots and crew.—Ed.

Ye Olde VF Pilot

Sir:

We are finally selling our last F9F and going into the F4D program. We will not be needing the F9F accident summaries any longer.

We, of course, are glad to get into modern aircraft, but the old F9F-5 has treated us real fine. The only pilot caused accident we have had in 15 months was one by a visitor from the group who landed wheels-up—he hasn't been back. Only one mechanical failure.

The old bird won us the All-Navy Weapons Meet as well as the 3rd MAW meet and we also won the Commandant's Trophy for 1957. We think NASC helped us all the way.—Thanks.

ROSCOE R. ST. JOHN
ASO VMF (AW) 314

Whiz Kidding

Sir:

Just a short note to let you know how the mail situation stacks up for folks out in the weeds. Your January 1958 issue of APPROACH arrived here this morning (1/30/58).

The new feature (I sure hope it is a new feature and will enjoy a long and useful life) WHIZ QUIZ is a dandy.

The man who goofed on the footnote in re Q on page 6 should be made to write "Q equals ½ PV^2" 100 times on the blackboard.

A. H. REID, Cdr.
Fleet Air Wing SIX

APPROACH *hopes a new mailing procedure starting in May, will cut overseas delivery time. Whiz Quiz will continue until we run out of questions, and our printer is taking a quickie course in Greek.*

Plane Captain's Handbook

Sir:

To facilitate a better understanding of the S2F, the Maintenance Department of VS-36 has recently published a "Plane Captain's Handbook."

LTJG J. E. Pearson, editor of this 35-page booklet, has covered each item which is of importance to the safe upkeep of the S2F.

F. W. OLIVER
C.O. VS-36

New Mae West

Sir:

. . . If you will check the enclosed pictures, you will notice that we use the new type Mae West that goes with the integrated torso harness assembly. This flotation gear has very little extra room for survival gear. As I am personally against the idea of carrying heavy pieces of gear in the G-suit pockets which

Here the vest looks bulkier than it actually is. The major portion of it fits above the mae west, and no particular difficulty is encountered with arm or shoulder movement. There are no handles or corners to catch on anything during escape from the cockpit as all gear is enclosed in zippered pockets.

could easily be lost during the opening shock, I have obtained a survival vest and stocked it with the minimum survival items.

This vest can be ordered through supply: Vest Survival, Stock No. R37-V120, Ref ASO 3701, page 28, Item 738.

The vest has minimum gear installed in each. Extra gear such as fishing equipment and emergency rations . . . are suggested . . . I have checked with several other A4D squadrons and none of them have any special survival garment such as this . . . Considerable interest has been shown by these squadrons and because of this, I thought it important enough to pass on . . .

DICK BALLEW
Safety Officer, VA-12

Ejection Seat Data

Sir:

. . . Hope you can help me with some needed information covering the history of ejection seats, structure, method of operation, the force needed to fire one, and the figures to show how well they have performed in cases where ejection was necessary and performed.

. . . Send me a list of any articles where I could get this information as published in APPROACH . . . I have looked through several copies of this magazine and have seen one or two articles touching on this subject.

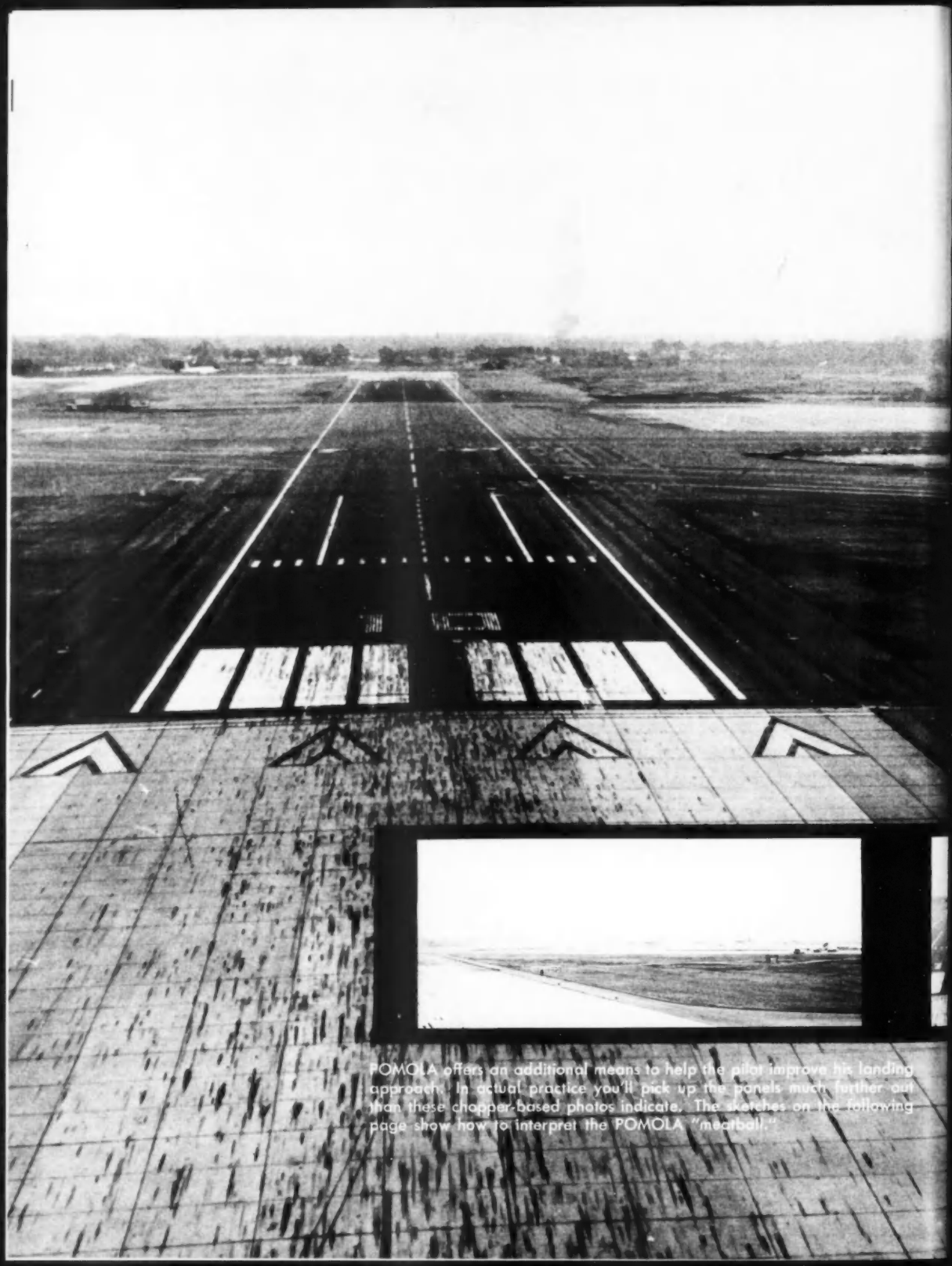
Any other references you can give me will be gratefully appreciated.

THOMAS D. SIMMONS
S/Sgt, VMF 313
NAS, N.Y.

See "Ejection Seat Maintenance", March 1955 Naval Aviation Safety Bulletin; Ejection Seat Training Pays Off, Page 28 Nov. '55 APPROACH*; High Altitude Ejection; Feb 1956; Ejection Tumbling March 1956; Murphy's Law, May 1956; Ejection Acorns, Jan '56; Explosive Decompression Jan '56; Mach Knock June '56. Also see Cumulative Index of July 1957, Ejection Seat and Bailout Study 1956; Shoot Seat Sense (NAVAER-00-80Q-37).*

Note: Some additional reference material, which was sent S/Sgt Simmons is also available in limited quantity. Interested parties may obtain same by writing APPROACH. *Also suggest writing Stanley Aviation Corp., 2501 Dallas St., Denver 8, Colo.—Ed.*

"Let thee not, in thy debate as to whether today's aircraft mishap is to be the subject of an AAR or a FLIGA, overlook the original purpose of the reporting system—to prevent future accidents!"—ANON



POMOLA offers an additional means to help the pilot improve his landing approach. In actual practice you'll pick up the panels much further out than these chopper-based photos indicate. The sketches on the following page show how to interpret the POMOLA "meatball."

POMOLA is here!

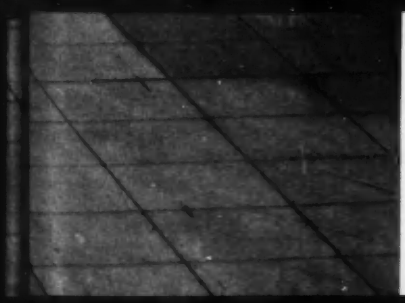
FLOWN into Norfolk lately? or Beaufort, S. C.? or Moffett? If you have, you may have wondered what the newfangled gimmick is at the approach end of several of the runways—the brightly painted fluorescent panels that you can see 'way out at the 90.

That, friend aviator, is POMOLA, the aviator's friend and undershoot / overshoot eliminator. It is still somewhat experimental, although it's been used many times, including about 250 passes by its proponent, Cdr. Carl Brown. BuAer people have flown it in a TV, and it's been approved by BuAer for continued evaluation by YOU and anyone who wants to give it a whirl. No moving parts, no new techniques to learn, no wearing out or maintenance, it just sits there quietly minding its own business while you use it to ride down a smooth 3-degree roller coaster to a landing.

PO-MO-LA, Poor Man's Optical Landing Aid — the "poor man" refers to he who builds it, for even the most destitute NAS can afford one. Once installed, it's there for rich and not-quite-rich pilots alike. And technically it's visual rather than optical, as it has no lenses or other components of optical systems. But who could pronounce POMVLA?

As a landing aid, POMOLA is not intended to substitute for the mirror or for any other existing landing aid (like eyes, depth perception, and good common sense); it's intended as a very inexpensive, easy-to-make landing aid and as a supplement to the mirror. And in cases where the mirror is down for maintenance, POMOLA will give you the same glide slope information—but without the waveoff lights!

Going back to its inception and beyond, the principle used in the POMOLA is not at all new, it's simply an adaptation of the same old principle of lining up two objects and keeping them in line to maintain a constant, straight-line path. You use, it, perhaps, unconsciously, when you line up your sights on an eight-point buck, or when you line up the



Continued from preceding page

hood ornament of your Mercedes-Benz SL-300 on the bumper of the car ahead and know that you're X feet behind him. That's assuming you let him get in front of you, of course. Wolfgang Langweische used it in his "Stick and Rudder" when he spoke of lining up a treetop with some point on the runway, and you use a modern specialized adaptation of the same principle when you ride the meatball on the mirror.

POMOLA then is a pair of reference points that you can line up to establish a predetermined approach angle. It doesn't answer all your problems, and it has some definite limitations, but its advantages far outweigh these especially when you consider the very low cost of installing a POMOLA on both ends of every runway at your NAS. And, incidentally, you'll see POMOLAs at places other than Naval Air Stations too, for the USAF has already expressed serious interest in the device.

We spoke of limitations, and one of those limitations is the fact that POMOLA is fixed at a prescribed glide slope angle with no easy adjustment. The height of your eyes above the runway will make a difference then, in where you touch down, depending upon whether you're sitting in a low-slung *Beech* or a high-sittin' R6D. The "no easy adjustment" also makes for no easy misadjustment though, for about the only way POMOLA can be knocked out of kilter is for a gale, a hurricane, or a low-flying set of wheels to knock it down.

The fixed position of the device also means that your view of it will change as you come 'round the corner from the 90-degree position—a disadvantage only if you're not prepared for it. Take a check at Fig. 1 and see how it will look to you in a normal approach.

The angular relationship of the two panels also means that when you're far out, your maneuvering room is greater—corrections can be smooth and gentle. As you fly in closer, the glide slope narrows down just like a radio beam, and at some point during a daytime approach you'll begin to see the 6-inch wide black stripe across each panel which will enable you to establish a good, sharp glide slope as you approach the touchdown.

Important to remember is that POMOLA will NOT control your airspeed for you, nor will it line up with the runway centerline. If you can see the POMOLA panels, you can see the runway. And, in the test installation for night use, the POMOLA lamps are tied right in to the runway light circuit, so if you can see the POMOLA lights you can also see the runway lights. If you *can't* see them, mister, why didn't you request GCA?

Ever come into a strange (or even a non-strange) field at night and wonder if you had enough air to clear those (unlighted) obstructions? So you played it safe and came in high, then chopped it all off and swooped down to a crop-duster landing?

The Royal Canadian Navy's "Wave-Off" spoke of the inherent danger of this sort of approach, especially in cases where

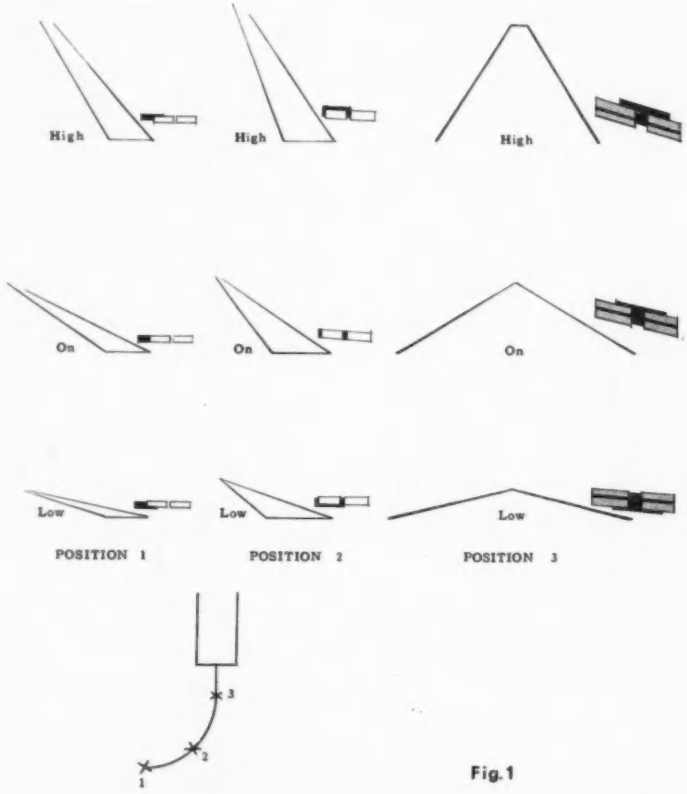


Fig. 1

pilots intentionally ride the ILS or GCA glide path high and swoop down as soon as they have visual contact. They said "the approach lights are a very poor guide when the angle of approach is changing; thus, if the rate of descent is increased immediately visual contact is made, there is considerable danger of the aircraft's striking the ground before obtaining a stable angle of approach." *(See "Instrument Approach Systems," March 1958* APPROACH*—Ed.)*

The same is true in your night VFR approach, but what a comfort it is to pick up a landing aid which is designed and built to bring you down a 3-degree glide slope, *clearing all obstructions,* and to *know* that if you follow it down you won't be tempted to make that last-minute un-naval aviator-like dive for the deck with its attendant danger. Well, POMOLA does just that, and with the experimental lighting system presently installed at NAS Norfolk, it's visible for as far as you can see the runway lights.

Although the presently installed POMOLAs have been flown by pilots with widely varying experience and in just about every model aircraft, APPROACH wanted to put it to a real test—so out went a *Beech* with some of our staff on a cold, moonless night. A non-aviator, briefed on the ground but never having seen POMOLA from the air, stood between the pilots and coached the pilot through first approach. "Gee," he said, "is naval aviation that easy?" During several subsequent approaches Cdr. Brown made some intentionally high and low approaches (known obstructions!) to illustrate how the red "meatball" lights worked just like those on the mirror—nothing new to learn.

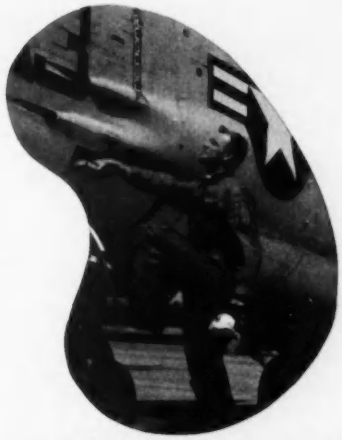
By now you must be champing at the bit waiting to be told where you can plunk down your $ and get one of these under-shoot-savers. Well sir, they're just not for sale—not at any price. All you need to get is some old lumber, few sheets of plywood, some nails, fluorescent paint, and a working party. Before you send them out, though, a bit of slipstick work will be necessary to insure that you don't set everyone down in the boondocks.

Assuming a 3-degree glide slope will safely clear all obstructions, and that the rear (meatball) panel is exactly at runway elevation, where do you stick the two front panels? Get the juniorest aviator in the ready-room to work up the math if you want to use dimensions other than those shown in the diagrams sent out in "Crossfeed," April 1 (let him fly it first too—this instills confidence in his own work!)

POMOLA should be installed on the right side of runways using a left turn approach, and vice versa. The 15-degree offset then enables the pilot to pick up the panels out at the 90-degree position, and to check them occasionally throughout the approach — right down to touchdown if he wishes.

The first POMOLAS made used gunnery banners vice plywood. This proved unsatisfactory, as the banners passed too much light and could not be seen far enough out. The thin plywood panels now used are much more reflective, can be seen a lot farther. Being a big slab, they'll have to be sturdy enough to resist normal wind and prop blast, but they'll still go to splinters if you churn into 'em.

As for illumination, several methods were tried before settling on the present row of standard red and green runway lights spaced across the black center bar of each panel. One object was to keep the cost down. so black lighting was set aside as too expensive. Floodlighting the panels was impractical as reduction of the runway light



CDR Carl Brown, NASC VF analyst and pioneer of POMOLA, would like to see all air stations adopt the landing aid, which is also being studied by the USAF and the Flight Safety Foundation. Between NASC projects, CDR Brown has found time to check out in the F8U, F11F, and F4D.

strength resulted in only a feeble glow of the floodlamps. And of course some light was lost by scatter and absorption. The row of colored lights mounted right in front of the black center bar of each panel (see Fig. 2) is tied into the runway lights at Norfolk and appears to work extremely well, according to reports of users.

When you call for strength three on the runway lights, you get the same intensity on the POMOLA (see Fig. 3). Norfolk's installation uses six red lights on the rear panel, and four green ones on each of the two forward panels, with the outboard lights being 6" inboard from the panel edges.

Color of the panels for maximum visibility is not fully resolved; the original ones were red (rear) and white (front), but fluorescent red or blaze orange on the rear panel and fluorescent yellow or yellow-green (chartreuse?) on the front panel appear at present to be more effective. In its approval of the device, BuAer recommended white for the front

panel, which is fine for tropic stations maybe, but we occasionally need snowplows even as far south as Norfolk! (Whatever the colors you had better plan on repainting the colors every six months or so.)

Sounds simple, doesn't it? So simple you might wonder why no one has thought of a gimmick like this before. Well, actually, others have and are working on approach aids along very similar lines.

'Way down under, in Australia, the Aeronautical Research Labs of Australia's Department of Supply have come up with a very similar installation for night approaches. Their rig is lined up for straight approaches and looks something like Fig. 4, in which the aircraft is low. As an added touch, the Aussies also incorporate a "whoops, there!" pair of flashing red lights which become visible only when you get below 1.9° guide slope—this is accomplished by accurately shielding the lights from above.

Hardly a week passes by that we don't hear of another NAS or MCAS planning to install a POMOLA, so we won't attempt to list all the places that you can find one. Our recommendation, involving the least amount of travel, is to get one installed at *your* NAS if you don't already have one. NASC will be glad to help with any advice you might need—and we'd be interested to know of each installation made.

Got the working party ready? Good, then turn to on the latest boon to harried, overworked aviators, and good luck!

Fig. 2

Fig. 4—

Fig. 3

Fig. 2 This day ground view shows the relative simplicity of POMOLA and the night lighting.

Fig. 3 Intensity of the POMOLA night lighting (ground view here) is keyed to the runway lighting for automatic control.

Fig. 4 The Australian night landing pattern—similar to ours. It was developed independently.

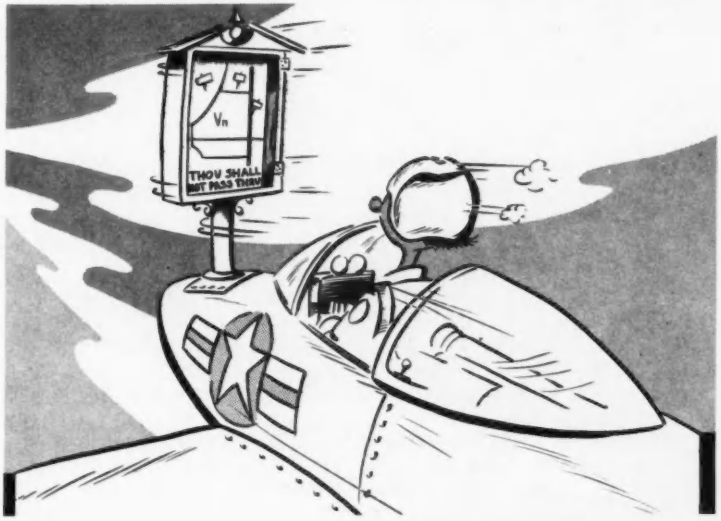
CDR Carl Brown, proponent of POMOLA, has asked that proper recognition be given to several of the many persons who contributed to the furtherance of the Poor Man's Optical Landing Aid . . . Cdr John Sheppard, who built one of the earliest models and conceived the distinctive name . . . Cdr E. F. Hazelton, NAS Norfolk Ops Officer, who aided in many ways . . . LTJG W. L. Burke, NAS Norfolk, who built the first working model . . . Cdr Tom Sedaker of BuAer, is one of the highly experienced aviators who evaluated POMOLA . . . Maj Bill Witt and Mr. Ray Talley, who participated in many discussions and offered valuable suggestions . . . Messrs. R. C. Preston, C. S. Southall and W. E. Wrinkler, all of NorVa Public Works, who assisted in selection of paints and installed the night lights.—Ed.

LOW ALTITUDE HI-SPEED FLIGHT

IN RECENT months several accidents have occurred to our operational jet aircraft during low altitude high speed flight. These accidents occurred because the aircraft design limits were exceeded. In over half of these accidents the design limits were exceeded to the extent that the aircraft disintegrated in flight.

Our jets are designed to give high performance at high altitude. They have a high ratio of thrust to aircraft weight, especially in afterburner, necessary for rapid climb to altitude and high speed at that altitude. This power available when lowered to sea level and used will push the airframe through the air faster than it was designed to go. With the airframe exceeding its airspeed limits it is operating in the "unglue area" and that is usually what happens, especially at low altitude. Articles 3 and 4 of the primer for pilots compilation "Flyboy" provides detailed information on the hazards and effects of flying in this area.

Another factor at low altitude and high speed is the effectiveness and thus sensitivity of the controls. Both increase with a decrease in altitude and an increase in speed. Add to this powered controls necessary for transonic and supersonic flight which provides the pilot with the means to make large control surface deflections with only a small physical effort. The total effect is a control surface which is very effective and easy to move, providing a combination that makes it very easy for the pilot to exceed the G-limits of the aircraft.



The sensitivity of the powered controls is another factor adding to the difficulties of the situation. There is usually a stick breakout force which is greater than the stick force outside the neutral position. This causes a tendency to initially overcontrol or overshoot the intended stick deflection with the aircraft responding accordingly. If the aircraft is being flown to the limit of the flight envelope this breakout force could result in overcontrol placing the aircraft in the unglue or unravel area.

With jets the low altitude flight envelope may easily and unintentionally be exceeded by the pilot. This may be disastrous to him or the effects of overstress may not show up until a later flight. Therefore, in view of past experience with such flights and the excessive hazard thereto, it is imperative that all commands operating jets insure that each pilot assigned is thoroughly familiar with the low altitude flight envelope and the possible penalty to himself or others if the published limits are exceeded.

In addition when flying the limits of the flight envelope at any altitude allow some margin for possible overshoot in airspeed or control and add a little more for that possible emergency maneuver or vertical turbulence.
—NavAirPac Av Saf Bul 20-57

For more details — See the Flight Handbook and "Something's Gotta Give," in FLYBOY. Ask your safety or training officer to check the local film library for the new movie on Vn/Vg flight problems, No. MN 6915 D. Additional copies of the "Flyboy" compilations are now available for military sources from NASC and for sale to the aviation public from Supt. Documents, Washington 25, D.C., 35¢ per copy.—Ed.

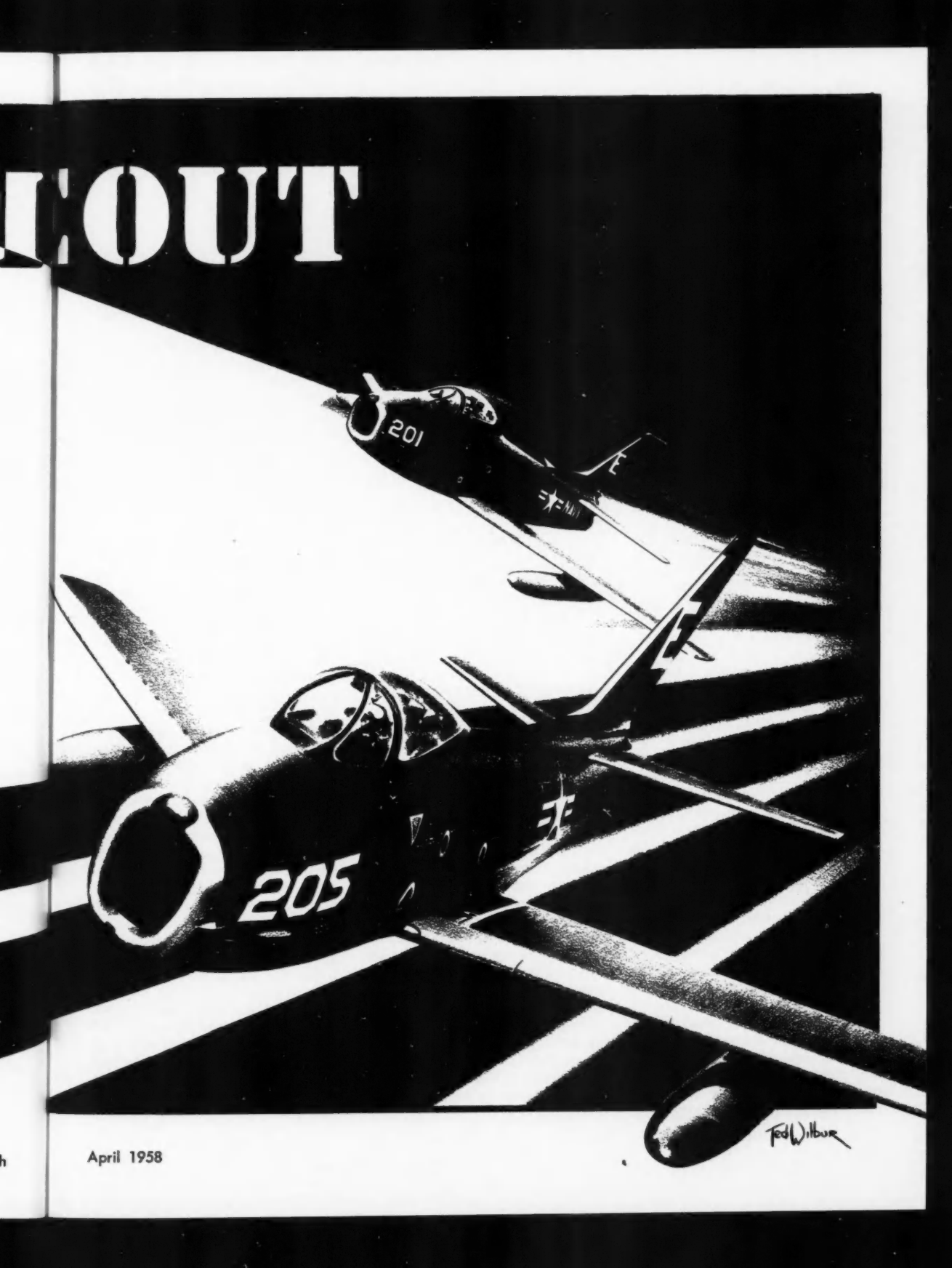
First of a series of articles dealing with YOU and YOUR ENGINE, by LCDR D. M. Saunders, Power Plants Officer, Staff ComNavAirLant . . .

FLAME

IT MAY never happen to you. Or, then again, you may find yourself flying along at 35,000 feet someday, or worse yet, some dark night, and suddenly, something is wrong. For a second or two, it may escape you. But, as the RPM and TOT unwind, and you feel the plane slowing down, it all becomes clearer. When the warning lights start coming on, there is no doubt

—FLAMEOUT

In spite of how busy you are attempting to correct the situation, there's probably still time to wonder—why? The possible causes are many and varied. They include inadvertent retardation of the throttle around-the-horn, fuel starvation, compressor stall or surge, effects of armament firing and material malfunction. Nuff sed on the first of these causes, but the rest will be discussed in more detail.



April 1958

Continued from preceding page

LCDR Saunders has served in VPHL-4, VP-21 and VC-5. His jet background: Master's degree in Jet Propulsion, three years in Power Plants Div. of BuAer, and as much jet time as he can boondoggle at NAS Oceana. He studied Jet Propulsion in postgraduate school and recently went through the JTTU course to back up the theory with some practical jet knowledge.

FUEL STARVATION—Fuel starvation may be the result of carelessness on the part of the pilot, inverted flight in some aircraft, improper functioning of some portion of the aircraft fuel system, or an air-lock in the engine fuel pump. Perhaps this last item needs a little more explanation. "Air-lock" is similar to the "vapor-lock" which has plagued motorists on hot days since the beginning of the automobile. Instead of operating on liquid, the pump finds itself trying to pump air or vapor—something it just wasn't designed to do. Most fuel controls require a minimum pressure to operate the valves within the control, and when air is introduced into the pump, its discharge pressure may fall below this minimum. The control then stops working and the engine flames out.

Most aircraft fuel systems are vented in such a manner as to preclude the introduction of air from the tanks into the main fuel lines. However, malfunctioning of the system or large changes in aircraft attitude with a low fuel state may result in a slug of air reaching the engine fuel pump.

Some aircraft installations have provisions for getting rid of this air. In other types, an air-lock may mean that a relight is impossible or that the time required to obtain a relight may be considerably increased. Some indications of air-lock are engine fuel pump warning lights ON and abnormally low or zero fuel flow.

One more word of caution. Except in case of fire or a similar emergency, do not turn off the fuel tank shutoff valve or the master switch controlling the fuel when the engine is running or windmilling since this may cause collapsing of the fuel lines or the old-fashioned vapor-lock.

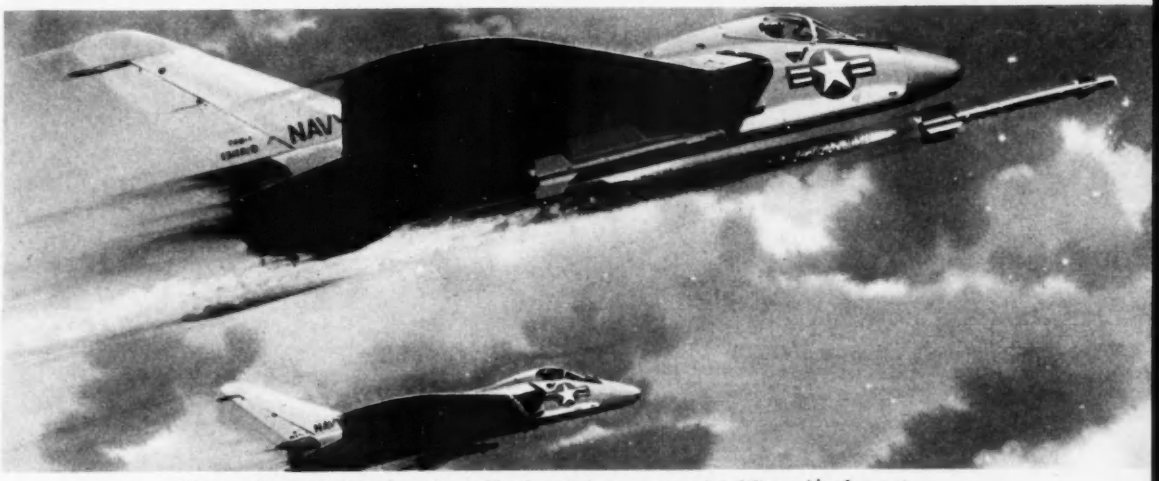
COMPRESSOR STALL OR SURGE—Occasionally, high G maneuvers at altitude, very high angle-of-attack climbs at altitudes approaching the aircraft ceiling, snap accelerations or decelerations of the engine, or flying in extremely turbulent air (such as a thunderstorm) may cause compressor stall or surge in some aircraft. Flame-out may occur in these cases as the result of an over-rich mixture in the burners as the air flow fluctuates too rapidly for the fuel control to compensate properly. When such flight conditions are encountered, flame-outs usually can be prevented in aircraft with ignition switches by turning on the ignition for the duration of the maneuver or condition. When the ignition is ON, the engine relights automatically as soon as fuel control compensation takes place or the inlet condition corrects itself. The pilot may even be unaware that a flame-out has occurred. In their operating instructions, Pratt and Whitney points out that the high energy ignition voltage of a turbojet engine causes much more rapid igniter plug erosion than encountered in reciprocating engine spark plugs. The period that the ignition is ON must therefore be limited to an absolute minimum.

EFFECTS OF ARMAMENT FIRING—Both guns and rocket motors are capable of producing compressor instability and/or flame-out. In the case of guns, the predominant factor is gun blast which distorts inlet air flow. With rocket motors, the engine is affected primarily by the temperature of the rocket exhaust.

The effect of armament firing upon a jet engine is dependent upon the degree of stability of engine compressor and combustor, the location of guns, rockets, or missiles with respect to the engine inlet, attitude, and angle of attack. In addition, the synchronization and speed of gun firing, as well as size and number of rocket missile rounds fired, will be influencing factors.

Where the particular engine/airframe configuration permits, armament-induced flame-out may be eliminated or greatly reduced by using the ignition switch in the manner described above. Thought is being given to connecting the ignition system to the firing button in some aircraft. If flame-out does occur, relight procedures may be initiated immediately since the effects of armament firing are very short-lived.

MATERIAL MALFUNCTION—If flame-out is the result of material malfunction or failure, it may be dangerous to attempt a relight. Although no hard and fast rules can be established in this case, the following general



Either gun blast or rocket exhaust is capable of producing compressor instability and/or flameout.

guidelines are set forth:

1. If the flame-out was preceded or accompanied by explosion (not to be confused with compressor surge), excessive vibration (attempt to distinguish between engine and airframe vibration—engine vibration can generally be felt in the throttle), noise indicating damage to the engine, or fire, it is generally unwise to attempt a relight, even if the fire goes out.

2. Fuel control malfunction may result in flame-out. If the engine is equipped with an emergency (or manual) fuel control, it may be used for relight and subsequent operation. If the engine does not have an alternate fuel control system, and if it will relight, attempt to find an airspeed and power setting which will give stable engine operation until a landing can be made.

3. If the RPM drops off to zero following a flame-out, it is possible that only the tachometer has failed. However, it is much more probable that the engine has seized, or that there has been an accessory drive failure which may make relight impossible. Since attempting to relight a seized engine could easily result in an explosion, do not try to start an engine with a zero RPM indication unless a more serious emergency exists or unless there are other indications that the engine is rotating (i.e., oil pressure, some hydraulic pressure or electrical output, fuel flow, etc.).

RELIGHT—As soon as it is definitely established that a flame-out has occurred, retard the throttle to the closed position. This prevents flooding the engine with unburned fuel and possibly fouling the spark igniters.

In-flight engine relights may be consistently obtained at any combination of airspeed and altitude which satisfies the compressor air intake and RPM requirements of the engine. Before attempting a relight, it may be necessary to increase or decrease the airspeed or to decrease the altitude. The best relight conditions can be obtained from the Pilot's Handbook. In high-compression engines, such as the J57 and J71, successful relights may sometimes be obtained at very high altitudes if they can be accomplished rapidly before the RPM and temperature have decreased appreciably. Most lower compression ratio engines start best at 25,000 feet and below. "Hung" lights may result at higher altitudes and the engine refuses to accelerate. However, if the situation is serious enough, a relight can be attempted at any combination of speed and altitude —and it may be successful.

If airspeed, altitude, and RPM are within the limits prescribed by the handbook and the engine fails to start, as indicated by a rise in TOT, check the following:

1. Throttle in correct position.
2. Ignition and/or master switches ON.
3. Battery or emergency drop-out unit supplying power.
4. Fuel pumps ON or operating and fuel valves OPEN.

KNOW YOUR AIRPLANE—It is apparent that the above information does not represent specific operating procedures for any particular model of aircraft. These procedures are contained in the Pilot's Handbook and applicable technical directives. However, it is hoped that this background information will provide an insight into the "why's" and "wherefore's" of the handbook. Many emergencies fail to follow the book exactly, and if a pilot doesn't thoroughly know his airplane and engine, he's *really* in trouble.

Next Month: (Afterburners)

ANYMOUSE
and his hairy tales

W. SMITTY?

THIS night round-robin flight went along according to schedule for a considerable length of time before things started going astray. About four minutes I think it was . . . My first twinge of uneasiness appeared as I sat in the superbly appointed and well-lighted cockpit, glowing red at just the right brilliance, staring at my kneepad and wondering why the clean white sheet of paper was there instead of the ATC clearance I had only recently copied. It appeared as though the top sheet had been removed, leaving only a few indentations on the sheet beneath. Then, in a burst of comprehension I remembered the red pencil . . . an interesting observation, must remember to bring this up at the next APM . . . oh well, I could remember most of the clearance anyway.

A smile formed inside my mask as the ADF needle swung lazily to and fro, I had hit high station on my climbout right on the button . . . Approach Control must have thought "there's a smooth aviator" as my voice report flowed forth with the ease and assurance of one accustomed to instrument flight. The gleaming jet was putty in my hands as I swept gracefully around to pick up my heading to the first fix . . . an intersection formed by a low freq range and a bearing from a commercial broadcast station. (A daring bit of planning, eh? . . .) I couldn't remember the exact altitude at which I had been cleared to enter the control area, but up this high there's no danger from other aircraft. Wryly, I thought to myself: "I'm above it all . . . " Good pun.

I had no trouble tuning in the commercial station . . . these things come easy to me, always have. I couldn't for the life of me remember the frequency of the range however . . . so I pulled out my trusty, if somewhat old, WAC chart and scanned its surface rapidly. You can imagine my utter dismay at finding that my chart showed not one radio range, not one frequency, no airways whatsoever, no isogonic lines, no control areas or zones . . . in fact, not one thing was evident that is printed in . . . printed in . . . that's it! RED. How about that. I realized that augmenting my WAC chart with a Radio Facility Chart might not have been a bad idea . . . but I had been in tight situations before, experience will show in the long run . . .

It was during the process of trying to smash the red lens on one of the console lights that my Mae West suddenly inflated . . . a breathtaking experience to be sure . . . But quick reactions paid off and I was soon slashing at my rubber straitjacket with my bush-knife. It must have been at this time that I severed the oxygen hose. (It proved to be extremely difficult to handle such a big knife in the confines of a cockpit, but it surely impresses the "youngsters" in the outfit . . .)

As I returned to the task of trying to construct a little white light from the console light, I noticed (being unusually keen of perception) that I was no longer having to force the air out of my lungs against pressure of oxygen. You see, I always fly with the oxygen regulator set on "Safety Pressure" . . . one can't be too careful in this day and age of supersonics. Be that as it may, my tunnel-vision gave me a clear view of the oxygen pressure as it hit "zero" . . . and it didn't take me too long to catalog this situation as dangerous. The emergency bottle remedied this situation for the time being, and I returned once again to the console light.

About two or three minutes later, amid much struggling and pounding, I finally had my white light. Man, did I have white light! Blinded completely, was the word . . . but soon my well-trained pupils slithered shut and I grew accustomed to the new illumination.

By this time I was not too certain of my precise position. As a matter of fact a pilot with less experience would have considered himself entirely lost. But I knew that in a few short moments I would have myself fixed and be merrily on my way. Fingers deftly working, I took bearings, made calculations, studied the situation,

"I had no trouble tuning in the commercial station . . . these things come easy to me, always have."

recalculated, made rapid figures on my kneepad . . . which, by the way, showed up nicely with the proper light . . . took some more bearings, one final calculation and finally I had it. I was lost. With all my flight hours.

Now this is where things started to go wrong. Up to this point things had been deteriorating somewhat from the normal, but now the situation got a bit binding. It all started when I dropped my cigarette. It was lit. Now this incident probably seems pretty bad at first glance, but actually it wasn't. I had nearly a half-pack left. But being a conservative chap, I decided to retrieve the butt in the bilge rather than break out another one. This of course required that I slip partially out of my straps. Even so I couldn't quite reach my objective.

However, by sliding quite far down on my spine, bringing my right leg around in front of the stick and back under my left leg, I managed to nudge the cigarette over and grasp it. Feeling rather proud at having accomplished this feat, I stuck the weed between my lips and prepared to get myself back into the seat and present some semblance of an upright position. It was at this most unfortunate moment that I happened to glance out of the cockpit. A blaze of lights, unmistakably those of a sizable city, was rushing up at me. Years of training told me almost instantaneously that this was an emergency. I reached high, found the handle, and pulled.

At this point, let me insert a note for the Flight Surgeon who may read this . . . go back a bit and consider, if you will, my position at the time of ejecting from my aircraft. You will no doubt agree with me that it was not very ideal. From the standpoint of Aviation Medicine it left some-

Continued from preceding page

thing to be desired. From my standpoint it was a ripping, God-awful, smash-bang affair . . .

To continue, my automatic belt and automatic parachute functioned normally, and the descent was normal. The opening shock of the 'chute was a mite gripping since I was attached to the harness only by the left shoulder strap and right leg strap; this tends to put a nominal to abnormal stress on the entire bony structure of the human body . . . not to mention the rather unearthly snap of the spinal assembly.

Even though my "incident" does not depart too radically from most squadron doctrines and policies, I hope that the publication of it will help the newer, greener younger pilots to someday develop the composure and professional skill that in' time comes to those of us blessed with the aviation know-how and experience.

Shades of Walter Smitty! Don't know if this Anymouse is an actual situation, but it sure reminds me of a recent quote from BOAC:

"The jet pilot probably could be likened to a lion-trainer—as long as he remains in command of events there is little danger, but let him get careless or inefficient and he may find trouble approaching faster than he has ever known it before."—Headmouse

INSPECTOR'S ITEM

AN OPEN pocket knife which was left in the No. 2 bladder of the right outboard tanks of an R4Q-2 was found two years later.

A leak developed in an adjoining cell and during repair the cell containing the knife was opened for inspection.

The knife was still open and in the same condition as it was when forgotten.

Inspection indicated no damage to the fuel cell even though the knife had been open and loose in the cell for a period of over two years.

BACK UP

"WE WERE on the port cat in an S2F-1 with all engine instruments checking OK. The salute was given and halfway down the track I felt a swerve. We went over the bow in a bad skid headed for the water.

"I immediately raised the gear and tried to keep airborne. A quick scan of the instruments confirmed my suspicions—the starboard engine was out. The airspeed indicator showed 78 knots (safe single engine speed in the S2F is 85 knots). Full port rudder with trimmer was required. The engine was windmilling slowly. I feathered it and slowly milked up the flaps.

"As the airspeed increased, the yaw became more controllable and a slow climb was started. All of this happened in a few seconds. Then the carrier was informed of the situation and they offered me a choice of going to the beach (about 80 miles) or making a single-engine landing.

"Because the engine had windmilled so slowly, I decided that it had partially feathered. A successful restart was accomplished at altitude and after thorough testing, the aircraft was landed aboard the carrier.

"A thorough check of the feathering system was made and no discrepancies were found. The only conclusion to be made was that the copilot had inadvertently hit the feather button with his thumb while 'backing up' the pilot on the engine controls, with the jolt of the cat shot providing the three-fourths-inch thumb travel needed to feather the starboard engine.

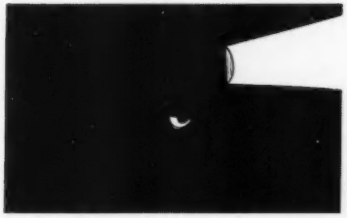
"The squadron policy of the copilot placing his thumb on the mixtures, and fingers on the prop controls during takeoff has been discontinued. I discussed the incident with the Grumman Rep and learned that twice before the S2F's have gone off the cat with single engines and neither made it. This Anymouse figures he has used up the odds."

LIGHT SITUATION

"ALTHOUGH I do not have a tremendous amount of experience in F9F-6 aircraft, there is one little item I found out the hard way, and at night.

"Returning from a cross-country at dusk I was told the runway lights were inoperative at home base. With about 1600 pounds of fuel remaining, I made one pass low over the field. I could not see it and subsequently lost my own instrument lights. To top it off, my small flashlight was inoperative so I filed for my alternate, with which I was familiar, about 70 miles away. Upon arrival there an actual emergency was in progress so with about 600 pounds (400 usable) I proceeded 15 miles to the next alternate and was cleared straight-in to land.

"Being rather desperate for some sort of light, so I could at least determine airspeed and altitude, I discovered that dropping



the wheel handle out of the UP slot will illuminate the "gear unsafe" light. This lights the airspeed, RPM, and altitude instruments, also without opening the gear doors.

"On final, with dive-brakes and flaps DOWN, gear UP, gear light ON and 300 pounds of fuel usable, I set up an approach at 140 knots with 80 percent power. One mile out, or about 25 seconds from landing, I dropped the gear and pulled up the brakes. Out went the lights but I held what I had and actually made a nice landing.

"I hope this may help someone somewhere sometime, also, impressing on them the point of having a good flashlight."

A REAL GAGGLE

ONE SUNDAY morning a lieutenant commander type cranked up an F9F-6 and went aloft on a general proficiency flight. While cruising at 30M he encountered four F-86-H model allied aircraft and they proceeded to perform some rather challenging maneuvers. Being of stalwart blue and gold stock he answered accordingly. A general melee ensued.

It took only a few minutes, talent withstanding, to ascertain that the *Cougar* was no match for the *Sabers*. Still the Navy pressed home the attack, but he began to feel rather queasy and found himself misjudging rates of closure and distance. Electing to "lose face" he rolled out abruptly to take stock of the situation. The ill feeling persisted, almost to the point of nausea.

What about the oxygen? System On-check; Pressure OK-check; 100 percent position-check; blinker operating . . . NO!

Bulging eyeballs located his disconnected oxygen mask end fitting. He connected the mask to aircraft supply, emergency pressure ON, and commenced a letdown. A rather shaken but wiser Anymouse came back to the roost.

The incident occurred at 30M with cabin pressurized to 20M. Apparently during the dogfight (strictly against regulation plus common sense) the rapid head swivelling and/or body movements had disengaged the 0 mask connector.

BRUISED

"THE R5D landing had been planned for a 5000-foot runway which had 10 knots of crosswind. Braking action was reported fair to poor due to snow and ice. Shortly after touchdown the landing gear warning horn blasted!

"Upon the order of 'Flaps up' after touchdown the copilot had

started the landing gear handle to the UP position. Prompt blocking (I later apologized for inflicting the bruise) prevented the handle from traveling past the NEUTRAL position (he also later apologized for moving the wrong handle).

"Next time I'll dump my own flaps.

"Granted that it was an unorthodox cockpit maneuver but if those brakes were to work on a slippery deck there had to be a maximum of aircraft weight on the wheels. Proper briefing of the copilot could have prevented the incident but this was not done assuming that his years in the right seat of a commercial carrier, plus his good performance on this extended hop, had qualified him to anticipate and properly execute a 'Flaps up' order.

"I feel the flap handle should be on top of the pedestal and the gear handle low on the pedestal.

"Incidentially this plane commander has 19,000 accident-free hours and the copilot 7,500."

Continued from preceding page

UNLUCKY TURN

"I WAS flying a night navigation flight in a P2V-2 and upon attempting to return to level flight after completing a turn, found my ailerons apparently locked.

"After using a great deal of force I was able to rotate the yoke and the restriction was removed. The copilot had hung his microphone over the yoke and it had lodged between the wheel and the yoke during the turn. The mike shattered and became dislodged when I increased pressure.

"Do not hang anything on the yoke or wheel is now my motto."

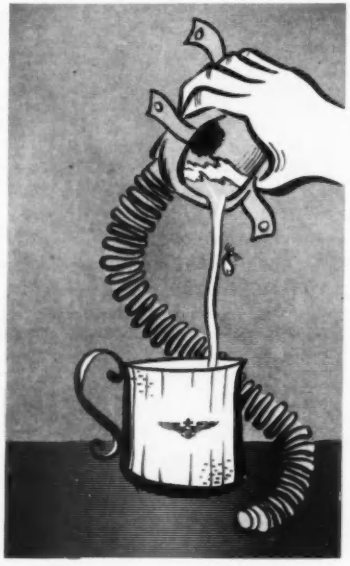
In the May 1956 issue there was an Anymouse report of a P2V pilot who found himself in a steep bank, close to the ground, with locked ailerons. The cause was a microphone which jammed in the yoke.—Headmouse

EXPLOSIVE DECOMPRESSION AND I

"AFTER I took off at 1913 in an F2H-2 on DVFR flight plan, I had to get a controlled shuttle climb to 1000 feet on top of frontal activity. I climbed to 35,000 feet and reported to Jacksonville Approach Control that the flight was proceeding on course via Amber 7 and 9 to Navy, Norfolk. Cruise altitude was 39,000 feet. After passing Savannah, the canopy began frosting over.

"By the time I reached Charleston I was unable to see out of canopy on full hot and unable to contact ground radio. Near Wilmington the canopy popped open to the rear about four to six inches. Explosive decompression occurred. Pressure breathing caused my mask to be pushed away from my face. I adjusted the straps but the exhalation valve and microphone undoubtedly were frozen completely.

"I had a difficult time holding the mask snug even with both hands, and failed to build up pressure to break loose the exhalation valve. I moved the trim tab to nose-down position and started an emergency descent. I turned on the Safety oxygen valve and tuned the ADF to the next station only by holding the flood light right against the glass dial guard. Frost covered everything in the cockpit and by looking out the canopy opening I could see that part of the descent was in the clear but was in the weather around 25,000 feet.



"I finally contacted Wilmington radio only after closing the canopy at about 22,000 feet and after full hot was on for a couple of minutes. They advised that all traffic was cleared below my altitude and I could make it at 19,000.

"The flight proceeded IFR A-9 Harrelsville, some 22 minutes later, before I could see out of cockpit. IFR was cancelled about 2040 and the airplane was at the line at 2100.

"When I put the mask on the desk in Operations, there were about two tablespoons of water in the chin cup of the mask. Extreme cold and oxygen mask complications made the descent necessary. I am sure the inside of the mask was completely frozen over prior to the emergency descent.

"The Flight Surgeon at the NAS dispensary examined me around 2220. There was no apparent ear or throat damage, but during the explosive decompression, intestines experienced inflation and combined with g-suit inflation (due to not being connected or becoming disconnected) a slight soreness was present on left lower abdominal section. The Flight Surgeon recommended that I sleep in the NAS dispensary overnight for observation. I was released after no apparent damage or soreness was present the next morning."

CRASH CREW QUALIFICATIONS

BARBER pole indicating nose gear of F3D-2 not locked upon gear extension. Pilot did everything possible to get positive DOWN indication including high speed touchdown to try to bounce nose gear into locked position. Landed indicating unsafe due to fuel shortage. Maximum aerodynamic braking and backstick during rollout.

After stopping, crash crew visually checked nosewheel locks and gave pilot "thumbs up." Upon parking at the line, line crew noted nose gear scissors was unlocked and immediately set up jacks and engaged lock. Crash crew not properly indoctrinated to check this type malfunction.

Recommend only "qualified" personnel be permitted to give pilot an OK on this type incident. This crash crewman could have been crushed had the aircraft settled on its nose while he was in the wheel well. Incident reported to base Ops.

Have you a question concerning aviation safety? Send it in to Headmouse on an Anymouse Report and he'll do his best to help.

headmouse

Losing Faith

Dear Headmouse:

WITH a warm feeling growing inside I read "Point and . . . Counterpoint" in answer to "NAVCAD's Diary" in December APPROACH. For here, in this one article, my faith in naval aircraft maintenance has been renewed. Allow me to cite reasons for my dismay and loss in faith in maintenance systems. Perhaps others have witnessed similar incidents; maybe this is not a local problem.

These incidents have all occurred within the last six months during which the squadron was in its initial stage of training following a recent deployment. The pilots' mean flight time in type is near 80 hours, exclusive of a few older hands. The average rotary wing time, for this is a helicopter squadron, is approximately 140 hours. These pilots are considered qualified in all respects for solo operation, and the following represents some of the items to which they are exposed:

INCIDENT ONE — Despite the fact that existing instructions call for the past 10 consecutive yellow sheets, Parts B, to be available for a pilot to examine prior to acceptance of an aircraft, this is not done in this squadron. A partial reason for this action is that repeated gripes downing the aircraft for such difficult to define items as vibrations or rough running engines may subconsciously influence a pilot to find the same gripe on the next flight. Another suspected reason is that downing gripes are still outstanding though some officer in maintenance feels that the aircraft may be flown safely on the next flight.

INCIDENT TWO — Parts B of the yellow sheets, on the pilot's side, are erased and changed from DOWN to UP above the pilot's signature despite complaints and instructions to the contrary.

INCIDENT THREE — Pilots designated "Test Pilots" and "Instructor Pilots" are scheduled for aircraft recently out of O & R repeatedly to avoid uncovering downing gripes.

INCIDENT FOUR—On one occasion one aircraft of thirteen was inspected instead of all thirteen when a safety of flight AMPFUR was received. On a second occasion no more than four aircraft were inspected as required by a safety of flight AMPFUR.

INCIDENT FIVE — Repeatedly the phrases "will pick up next check" and "ground check OK" are used. Recently, an aircraft was "downed" for two distinct vibrations, and a well described though highly unusual fuel pressure fluctuation, involving three gripes, all check "X" for down. The corrective action read "Tracked Blades" and "Ground Checks OK" *FOUR TIMES.*

One time soon someone will cream one in due to such actions. A near miss occurred within a week of this writing. An aircraft downed because the pilot could not secure one of the servo systems (either one of two is essential to flight) had a servo system failure on the next flight. Servo pressure was on and off intermittently, feeding forces to the controls, and this action could not be discontinued by the pilot's servo switch. The aircraft was, this time, controllable enough that a normal landing could be accomplished. The previous Part B Yellow Sheet had been changed from DOWN to UP by erasure.

Continued from preceding page

D-8 Facts

DEAR Headmouse:

I am in a helicopter squadron using the new D-8 hardhat. Because of the D-8's "soundproofness", its foam rubber lining, and shell that's so soft I can bend the sides together, I would prefer to wear my old P-5, but am ordered to use the D-8. Why, when Dr. Howard Snively, for SCCA, and a Pensacola safety officer say foam rubber is absolutely no good as a liner, does the government buy the D-8 for $90, when any civilian can buy a "X" type for $45. Incidentally, the "X" type is the only hardhat made in the USA that passed the tests given by the aforementioned experts.

The D-8's chin strap is excellent, in fact, the only thing of value in the hat.

If it were lined with a nonresilient substance, it could be made into a fairly adequate hat. My big question is—why isn't it done?

ROTOR MOUSE

The D-8 (SPH-1) helmet was designed for a specific need: cranial protection AND sound attenuation on a high order.

The D-8, as are other hardhats, is designed for maximum protection NOT ultimate protection. The principle behind a anti-buffet or crash helmet is controlled destruction. That is, the helmet rolls with the punch, and gets battered. The force is absorbed by the helmet instead of the head.

Sponge rubber—and the material used in this helmet has excellent sound absorbing qualities. For HS squadrons, sound absorption is a highly desired quality in helmets.

The Naval Aviation Safety Center does not put a "recommended seal" on a product by name brand. Safety and Survival Equipment is judged on "pretty is as pretty does" basis, tempered with experience.

In points, weight, retention, sound attenuation, and availability, so far the D-8 helmet has done "Pretty good."

Very resp'y
Headmouse

From Rags to Riches

Dear Headmouse:

This LCDR was not impressed by the "Perseverance" angle mentioned in the November APPROACH as a means of getting an APH-5. As a matter of fact, I had just about tossed in the towel.

But then Aviation Safety Officer, in checking flight gear issue to see why there were no summer coveralls in normal sized, etc. (that's another story) noted some APH-5's that had apparently been turned in as defective and were awaiting whatever is the fate of defective APH-5's. On various shelves in the issue room he noticed some H-5's spare parts, and came the light!

Our hero (that's me) went into action on the double . . . events went something like this:

1. Off to supply to get a stub requisition for one APH-5.

2. To Flight Gear with stub. Here things got a little complicated. First, find an H-5 in your size with repairable defects and convince storekeeper to issue it, you know the story—"this isn't RFI," the paraloft is going to repair these . . ."

3. Get list of parts needed to repair and return to supply.

4. Get stub for each repair part.

5. Return to issue and draw parts with said stubs. I might mention here that many parts are not available and much serum-giving is necessary.

6. Return to squadron in much glee with "APH-5 Do It Yourself Kit." Some wet blanket reminds me of need for fitting pads. Helmet had 3 installed but should start with new ones, so - - - - -.

7. Back to supply for more stubs:

   a. Fitting pads thick (3)
   b. Ditto thin (3)

8. Spent 3 hours carefully extracting the rubber ear pieces from the broken plastic foam adapters. This is hard to do without spoiling the earpieces and they are a critical item. Finally, success! !

9. Para-loft assists in gluing new plastic adapters into earpieces and fitting helmet. Right here, I'd like to point out that this earpiece design is poor. The earphone cannot be replaced without taking the whole assembly apart—and worse yet—you cannot even disconnect the helmet phone wires from the earpiece assembly without taking the assembly apart. I modified mine by drilling 2 holes in each plastic earpiece so that a screwdriver could be inserted to unloosen the phone wires.

10. Next night, first flight with my APH-5 (of course with a borrowed clear visor). This hat is as far ahead of the H-5 as Marilyn Monroe is ahead of Olive Oyl.

ROCK (APH-5) HUNTER

Just goes to show you what a "little" perseverance can do to put one of these protective bonnets over your brain.

Agreed that this procedure shouldn't be necessary but when an already abbreviated supply of APH-5's is made even shorter by those laid up for repairs, salvaging will put 'em where they'll do the most good. Page 5, para 5, of ACSEB 5-57 regarding disposition of unused APH-5 material is quoted for information. Compliance with these instructions will help such efforts.

"After the fitting has been accomplished and sufficient flights have been made to determine adequacy of fit, the unused sizing pads, shims, and sizing instruments shall be returned to the local supply officer for reissue."

The first 10,000 APH-5 helmets were delivered with clear eye shields packed in a flannel bag. Since the clear eye shields have limited usage, being used only for night flying, it is requested that every effort be made to recover and return those not being used, so that they may be available for pilots requiring them.

Very resp'y
HEADMOUSE

Dear Headmouse:

How much better is the APH-5 than the H-4 type hardhat?

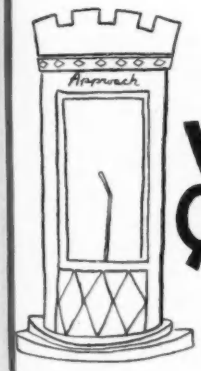
Why, if it is a better hardhat, is it restricted to high-speed aircraft pilots and not issued to US helicopter pilots?

No one in my squadron can draw a APH-5 even though MAG supply has more APH-5 than H-4 hardhats; they just will not issue them to helicopter pilots. To my way of thinking when we crash we hit just as hard as fixed wing aircraft do when they belly in to a field. I feel that we are entitled to the best protection possible and if the APH-5's are better than the H-4 we should be issued them.

ANYMOUSE

1. Better to the extent that the Army and Air Force are interested in buying APH-5's and they didn't buy H-4's.
2. The APH-5 helmet was originally restricted to high performance aircraft because of the increased ejection retention qualities and the improved visor for better oxygen mask goggle mating. Also considered was the small numbers entering the fleet, so priority was established for jets first. Present situation does not restrict helicopter pilots from receiving APH-5's as supply permits.
3. NASC cannot interfere with issuing procedures; suggest you contact your type command for issuing policies. See what Ensign Peter Persistence did in Nov 1957 Approach.

Very resp'y
Headmouse



WHIZ QUIZ

1. A pilot in a chopper is on a daylight, simulated instrument flight. The correct flight code classification is?
   a. 1A1
   b. 2A1
   c. 1A2
   d. 1R7

2. After a pilot completes FAM stage he can practice autorotations without a designated HAC in the cockpit. T_____ F_____

3. To maintain directional control after engine failure while hovering you would.
   a. Depress right rudder
   b. Depress left rudder
   c. Neutralize rudders

4. If it is determined you are going to overshoot your landing spot during an autorotation you would.
   a. Dive the aircraft to lose altitude quickly
   b. Reduce the A/S below normal autorotation speed so setting will occur.
   c. "S" turn

5. The first responsibility of the copilot in case of an engine failure at night is to.
   a. Attempt to restart the engine if altitude permits
   b. Turn on landing lights
   c. Turn the UHF transmitter switch to Guard so a distress call can be made.

6. In cold weather the density altitude probably will be higher than in warm weather. T_____ F_____.

7. The BMEP of the engine can be exceeded by:
   a. Decreasing manifold pressure and increasing engine RPM
   b. Decreasing engine RPM and increasing manifold pressure.

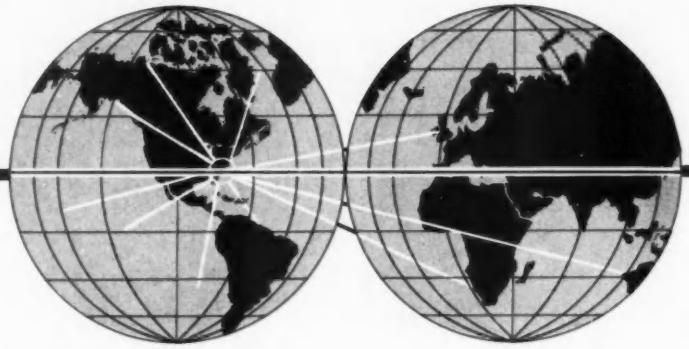
8. A blade stall is caused by:
   a. Malfunctioning parts
   b. Stalling out of the advancing blade
   c. Excessive speed or gusty conditions

9. Ground resonance can occur when:
   a. A normal Servo-OFF landing is made
   b. Turning off the Servo Switch with a minimum of rotor RPM
   c. A hard uneven landing is made
   d. "Coriolis" effect is evident

10. There are three inflatable compartments in the M-2 life vest. The center compartment is inflated orally. T_____ F_____

See answers Page 48.

MONITOR



BLUE CHIP PLAY

(From an address by RADM P. P. BLACKBURN, JR., USN, Commander, Taiwan Patrol Force, made as Chairman of the Chesapeake Area Aviation Safety Council on 26 Nov 1957.)

"There are many platitudes which are mouthed when talking at a meeting such as this. I know we all get a little bored hearing the same old things. Command responsibility, professional competence, and eternal vigilance or constant alertness are phrases which keep popping up when discussing accident prevention. Of course, the reason for the necessity of repeating these phrases in safety discussions is obvious. It is because they are prime factors in accident prevention.

"Today I wish to discuss briefly a line of action for preventing accidents which involves these oft-mentioned factors.

"Modern aircraft are increasingly becoming more complex. This is another one of those statements which are often made and widely accepted but not too often analyzed.

"Let us examine this statement and consider the complexity only as it applies to the pilot.

"In the newer aircraft there are more automatic devices which actually simplify the job of the pilot. Automatic fuel controls meter exactly enough fuel to the engine to maintain constant RPM under various conditions of temperature and air density. Automatic stabilization systems correct for various degrees of induced pitch and yaw. An automatic pilot maintains altitude and course and relieves the pilot of these distracting chores.

"Under normal operating conditions the pilot's job is simpler but consider what happens when this automatic equipment fails. He must react promptly, analyze the situation, take corrective action, and perform the oftentimes intricate functions which the malfunctioning equipment was designed to do.

"Therefore we can say that the modern aircraft is simpler, in many respects, as regards normal operations but far more complex when something goes wrong.

"Oftentimes the pilot does not react properly when an emergency situation arises. Some recent accident reports bear this out.

"The pilot of an F9F noticed a decrease in RPM late in his takeoff run. He aborted with consequent strike damage to the aircraft. Investigation revealed that the emergency fuel control would have worked properly but the pilot didn't even try to use it even though he had been briefed to use emergency in case of loss of thrust in this situation.

EXCERPTS FROM SOME OF THE NAVY'S SAFETY COUNCILS THROUGHOUT THE WORLD, WHO PROVIDE LOCAL LEADERSHIP AND EMPHASIS TO THE NAVAL AVIATION SAFETY PROGRAM.

'Quotable'

Analysis of aircraft accidents indicates that failure to follow SOP is a primary or contributing cause factor in many cases.

Standard operating procedures are based on experience and sound knowledge gained the hard way through the years and sometimes from costly accidents. These SOPs have been carefully evaluated by qualified people and proven by actual performance. They were established as safeguards in our operation so that flight crews could successfully accomplish their mission with maximum safety and the best chance of survival.

"A pilot in an F3H experienced a flameout and failed to drop his ram air pump until his controls froze even though squadron doctrine states that in any situation here there is a possibility of loss of hydraulic pressure, dropping the emergency hydraulic pump should be the first thing accomplished.

"Three months later another F3H pilot in the same squadron failed to extend his emergency hydraulic pump when his engine flamed out.

"In at least three recent F8U spin accidents the pilots failed to extend the landing droop even though squadron doctrine in one of the squadrons calls for this action as soon as a spin is encountered.

"The pilot of an F11F failed to actuate the ram air turbine when he flamed out and lost control of the aircraft. As a consequence he was forced to eject under unfavorable circumstances.

"I have mentioned instances in which the pilot's action should have been instinctive and almost instantaneous and yet where he failed to react properly. How many fatal accidents have been caused by improper action or inaction of the pilots in an emergency situation will never be known but there is no doubt that the number is considerable.

"Here, then, is an area where positive action may be taken to reduce or minimize accidents.

"First, I urge all squadron commanding officers to make the utmost use of all training facilities available to teach and drill their pilots in *emergency procedures*. Frequent and periodic use of the operational flight trainer, where available, is an excellent means to this end.

"Second, and most important, I wish to impress the individual pilot with the fact that he, *and only he*, is cognizant of his ability to cope with an emergency situation. Knowledge of his airplane is necessary but not enough. He must constantly review in his own mind the proper action in every conceivable situation.

"The true measure of a pilot is his ability to hit in the clutch. The only way to insure this ability is constant, conscientious practice.

"When the blue chips are on the table don't play unless you have the cards. You may bluff a few pots but eventually you are going to be called."

Practically and Tactically

by 1st Lt. John J. Sheridan, USMCR
VMA 224, MAG-15 3rd MAW

Occasional unstudied comments are made that safety and *squadron mission accomplishment are not compatible; that the safety program tends to reduce the aggressiveness and daring required in combat. It is a statistical parallel that units with the highest combat readiness ratings also have the best safety records!*

The time to brush up on the tactical aspect of maneuvers is NOW . . . . .

HAVE you a last ditch maneuver commensurate with your type aircraft?

When does reversing a turn help you and when can it kill you?

What are the offensive and dedefensive duties of a wingman?

If you haven't the answers to these questions on the tip of your lip, better sit out the next game of acey-ducey and read on.

First, let's get one thing straight. Tactics are survival knowledge for every pilot regardless of aircraft model or mission. Anyone who assumes he will never get the chance to use his tactical knowledge is on par with the joker who lets his ejection procedure go because only a chosen few ever get to go over the side.

Now, let's eyeball the situation practically. If and when another "police action" pops up and you are in the air, consider yourself fair game. If your tactical knowledge is stale then consider yourself just so much red meat *The time to brush up on the tactical aspect of maneuvers is NOW and not when you have a bogie corned at six o'clock.*

Granted some aircraft have the potential for the offense and some have to be strictly defensive in nature, the point is that your bird must have at least one tactical advantage. Therefore knowing its strong points and adapting maneuvers around these points will provide you with some excellent life insurance.

We know an AD can't outrun a *BANJO*—or a *FRESCO*, but it sure can out-turn him. Its slowness is another advantage *if* the pilot is savvy enough to know how to use this lack of speed.

Improvement of tactical flying is primarily individual pilot responsibility. A little tactical proficiency can be picked up from every flight. Good formation is good tactics, sharp gas economy is sharp tactics. Nearly anything you do in an aircraft can contribute to your overall tactical knowledge.

If you are scheduled for an instrument hop then by all means major in instruments, but minor in tactics too. Reporting points and fuel plans take on added importance if you think of a reporting point as a check point behind the bomb line and any money you can make on the fuel plan means extra minutes in evasive maneuvers. The chase pilot on a routine instrument hop can practice his tactical wing position and still clear the aircraft flying on instruments. Above all he can keep that all-American head on a swivel and spot them'uns before they spot us'uns.

The next time you spot a plane in the area ask yourself, "From where I sit what could I do if that were a bogie?". Think about it and back up the brain waves with some good dope from some recent publications. Talk it up with the boys at happy hour, maybe some of them have a few ideas worth listening to.

Now if enough of the boys pepper up the topic, the squeeze could be put on the operations officer for a few real meaty tactical hops. If the aircraft in your barn can't quite hack an offensive mission, perhaps a few of the fire breathers on the base could be persuaded, (chuckle), to make a few runs on your birds. This is the stuff happy hours are made of.

Do what you can to get the tactical ball rolling and supplement your overall tactical knowledge. Look up the answers to the questions asked earlier. If publications are not random in the readyroom write to FAGU and ask for copies of their gunnery bulletins, and also write to the Naval Air Publications Facility, 700 Robbins Avenue, Philadelphia 11, Pa., who can procure copies for you of the monthly Fighter Weapons Newsletters published by the USAF Fighter Weapons School at Nellis AFB, which contain both fighter gunnery and occasional tactical information articles.

And remember that quite a few pilots put in a lot of sweat and more than a few have died developing the basis for our offensive and defensive tactics. Make the most of their contributions by putting them to use—practically and tactically. ●

a digest of recent aircraft accidents

truth *and* consequences

PRESSING RUN — The pilot of an F9F-8 made a normal run, fired close and made a late recovery. The aircraft struck the lower end of the tow bar with its right wing. Damage: A 9-inch cut in leading edge of right wing and pitot tube torn off.

The pilot returned to base and made a normal landing.

He had failed to break off his run with sufficient time to recover and miss the tow bar.

The danger involved in pressing a gunnery run too close, or making a late recovery, during all gunnery flights should be reemphasized by unit commanders.

It's mighty satisfying to tote up a good score after a gungho hop at Gitmo or El Centro, and to do so you may be tempted to press your attack. Maybe you get another hit, but more than likely you bag a bar or banner, and disqualify! The consistently proper passes pay off, every day.

BAITED HOOK—On the fifth run of a GCA training hop the pilot of an FJ-4 requested a final landing and was cleared. At this time a light rain was falling and visibility was 2½ miles.

The pilot had a total of 8.2 hours in model and this was to be his first experience in handling the FJ-4 on a wet surface. There was a 2-knot tailwind, which according to the accident board's analysis, was not a substantial amount, but did amount to a 10-knot deviation from the 8-knot headwind which was normal at the field at that time of year.

At touchdown, approximately 600 feet from the approach end, the aircraft appeared to be somewhat faster than normal. Close to 7000 feet of hard surface stretched ahead. Due to lengthy and disturbing transmissions on guard channel, the pilot had turned it off and during his landing he remained on the assigned GCA channel.

As the FJ-4 passed the halfway point on the runway it was moving sufficiently in excess of normal rollout speed so as to prompt the tower operator to issue a verbal advisory to the pilot to drop his hook. The advisory was made on all tower primary channels, and on Guard channel. The advisory was not received of course.

The aircraft crossed the arresting gear, located 975 feet from the end of the runway, at a speed estimated to be between 25 and 35 knots. As brakes were forcefully applied the plane veered to the left. A brief correction was made by releasing the left brake but upon seeing he was edging toward an excavation next to the runway, the pilot reapplied both brakes.

As the FJ-4 continued to move to the left, the left wheel travelled onto the runway shoulder and then dropped into an excavated area at the junction of the runway and taxiway. The left gear collapsed upon contact with the concrete at the end of the excavation. There was no fire and no pilot injuries.

In his statement the pilot mentioned that the accident could have been prevented "had I dropped my tailhook and engaged the arresting gear when I saw I was going to go into the overrun."

One of the Board's recommendations was that wide dissemination should be given for the necessity for monitoring Guard channel at all time during flight and ground operations. This channel provides a vital safety link between the pilot and his chase pilot, as well as between the pilot and the various ground controlling agencies.

Watch for more on Guard in a future issue of APPROACH.—*Ed.*

WHOSE WHEELS?—"I departed NAS Norfolk on a VFR flight plan for (a Gulf Coast air station) and was leader of a two-plane flight.

"The wingman had some difficulty in fuel transfer and could not transfer all the fuel from the right tank. After passing Atlanta, it was decided he could not reach the destination with at least 1000 pounds fuel remaining so the decision was made to land at (a military field nearby). Reception of the Low Frequency range stations was somewhat unreliable and a GCI steer was requested. Contact was established . . . but no vectors were received. (The field) was then contacted and a D/F steer was obtained.

"Weather was about 3000 feet with a small thundershower to the west. Let-down was made in the clear about 10 miles south (of the field). Another steer was obtained at this time and we proceeded to the field in the clear.

"After sighting the field on a heading of NE, the tower instructed me that the landing runway was 32. I made a 270-degree right turn after crossing the field in order to make a normal break for runway 32. Upon reaching the position for a normal break, my wingman reported on base leg for landing. He had considered my previous right turn a break and commenced his approach accordingly. At this time I had 1000 pounds left and, knowing that my wingman had several hundred pounds less, I was willing to let him continue his approach and land ahead of me.

"At this time I broke for landing and attempted to spot the wingman. On the downwind leg I called the tower and reported gear-down-and-locked. I then looked at the wheel indicators and hydraulic pressure and after landing, vividly remember that all the indicators said up, yet at the time nothing seemed abnormal.

"The approach was continued and the tower reported the wingman had landed and I was cleared to land. The remainder of the approach was normal until touchdown at which time the plane nosed over rather abruptly and skidded to a halt. Although I knew something was wrong, I did not realize I had landed wheels-up until I got out of the aircraft and noticed that all wheel well doors were closed.

"There was no wheels watch on the runway and the tower did not notice the wheels-up condition."

It was noted by the accident board that this was the pilot's first landing at this field. By the time the field was sighted his aircraft was almost over the approach end of runway 32 and a 270 degree right turn was necessary for an initial approach to the break. His airspeed at the break was approximately 200 knots rather than the usual 250 knots used at his home field. At the time when he would normally have lowered his landing gear the

Continued next page

Continued from preceding page

tower informed him that he should have made a right break rather than a left break. His attention was also directed toward attempting to see his wingman during this part of his pattern.

"I know of no way that this particular accident could have been prevented," said the pilot, "except that pilots must be more alert and possibly make more than one landing cockpit check when operating at strange fields and at any time when distracting events occur while in the landing pattern. I was so positive that my gear was down that only by the use of some positive warning device would it have been possible to divert my attention from the landing approach."

"I was so positive that my gear was down that only . . . a positive warning device would . . . have diverted my attention from the approach."

When questioned as to why he did not realize the gear was up when he remembers looking at the indicators and seeing that they indicated UP, the pilot stated, "It was probably because they all indicated the same thing." Tower personnel stated that they were busy and did not have time to check the aircraft's gear.

The pilot had 4000 total hours with 400 in jets.

"We in aviation must profit by the mistakes our fellow pilots commit, for we as individuals will not live long enough to make them all ourselves. By the same token, when we avoid making mistakes and accidents, we must discuss the means employed in achieving our success."

QUOTE & UNQUOTE — *LSO:* The SPN-12 gear was working erratically and I was not using it . . .

BOARD'S ANALYSIS: The SPN-12 repeater on the MSLO platform was not operating at the time of the accident. The repeater in Pri-Fly was operating and is considered an excellent indicator by the people who use it every day.

SQUADRON SKIPPER: The Commanding Officer has personally observed the operation of the SPN-12 installation from several stations. It is to the best of my knowledge, in good repair and operating condition.

CAG: . . . It is recommended that when SPN-12 information is available at places other than the LSO platform, that SPN-12 information be relayed to the LSO either via sound powered telephones or radio.

SHIP'S SKIPPER: Prior to this accident, the SPN-12 equipment was calibrated once daily prior to air ops. Since this accident, it is additionally calibrated prior to commencement of night flying. The equipment was calibrated on the morning of ____, using a signal input equivalent to 114 knots, no wind. All stations indicated within 2 knots of this value . . .

The history of the SPN-12 equipment in this ship has been one of consistently high accuracy and availability. When the gear is "down", the LSO is so informed. It was not "down" on the night of _____.

COMCARDIV: . . . There is no indication from the record that the MLSO informed Pri-Fly of his belief that the SPN-12 gear on the platform was not operating properly. If he did, there is no indication that Pri-Fly attempted to keep the MLSO informed of the aircraft approach speed using an alternate method of communication.

Had the MLSO been aware of the excess speed through an

alternate communications, the aircraft could have been waved off and the accident possibly avoided. It is recommended that emergency communications procedures and a doctrine be established to provide the MLSO with the necessary aircraft speed information in the event his SPN-12 gear fails to function properly.

COMNAVAIRFORCE: Readdressed and forwarded, concurring in the conclusions and recommendations of the Aircraft Accident Board, and in the remarks contained in subsequent endorsements.

Upon his return to the ship the pilot bolted twice and was high and fast on the third approach. The final landing speed was considered to have been between 140 and 145 knots and the jet hit hard, breaking 17 planks in the flight deck. Number 5 wire was engaged.

The Board noted that the pilot did not dive for the deck. He flew a steady pass to a hard landing. They continued in their analysis and said turbulence was also a factor in the accident. "With strong natural winds there is a turbulent area in the approach (not to be associated with the stack gas area which is light turbulence in comparison) which is uncomfortable to fly through."

"This area causes airspeed losses (a drop of about five knots is not unusual), wing rocking and attitude changes. This area is completely flyable but may cause occasional difficulty for the pilot when it is severe. The severity of this turbulence seems to be somewhat associated with the pilot's familiarity with it. It is a normal reaction to add power and increase airspeed when turbulence is encountered in the landing approach. Its presence undoubtedly contributed to the increased airspeed on the landing approach and it may have increased the sink rate, but it is normally not present in the immediate area of landing."

The LSO commented that all aircraft received earlier in the night had considerable trouble with air-mass and stack-gas turbulence. He added that this turbulence was noted previously with a high gusty surface wind and relatively low ship's speed.

The LSO commented that all aircraft recovered earlier in the night had considerable trouble with air-mass and stack-gas turbulence.

STACK TURBULENCE — The AAR Board of this F4D hard carrier landing accident produced some interesting comments:

Briefly, the accident involved an experienced driver (3000 total hours 250 hours in F4Ds) but slightly stale tailhooker (no CV landing in 30 days) who was shot off the carrier on a night CAP flight.

Naturally these are intriguing and interesting statements and some study of them appeared worthwhile. After tailhook people here at the Safety Center and in the area were quizzed this collective opinion resulted.

Analyst's Note:

It is true that there is an area

of turbulence in the approach area. It is probably caused by the burbles from the island. Often the stack gases will be mixed right in with this burble, since the stack is a part of the island. However, the stack gases, which are often used to locate the turbulent area, do not always cover the entire area of turbulence, for the island is large, and the gases are mixing, but they are not necessarily mixed completely with the turbulent air by the time the turbulent area crosses the approach groove. The approach groove almost always goes through this area on the angle deck carrier.

This is not the hazard this AAR would lead one to believe, Perhaps it is worse for the F4D than for other aircraft. At any rate, most pilots know it is there, and compensate for it, are ready for it, and know that the air will be smooth on the other side. It takes about two to three seconds to pass through the area at its worst. It may knock off some speed. Some pilots we know generally add two percent just as they hit it and take the two percent right back off.

EINE KLIENE NACHTFLUGEN mit apologers ab Dave Morrah und Wolfgang A. Mozart. Ein airkraftkarrier boaten ben gesteamen der ocean mit conductische nachtflugen tactikers. Die airkrafters ben gewhooshen und geschnorten von der katapulter midout gesplashen in der drink, und now is upkommen der rekoverie.

Ein, zwei, drei, down ist kommen die tailhooker birden. Whamisch! Bamisch! Danke ma'amisch! Und ist remaining in der luft but ein propellerkraten und ein jettenschnorter.

Die whooshenjetter ist maken couple schtinken passes und ist getten offgewaven mit der deck gefoulen by grossenbomber. Ist getten low der petrol in em tanken, und der piloter ist mighty anxious to get aboard, zo ist gediven for deck to gesnatchen der first wire midout obergefloaten.

Donerwetter! Der schnortenspitter gehitten em deck like sackerbricken, und der nosenwheeler ist offgebusten. Also, der nosenwheeler strut ist wedgen in der katapulter track. Ach!

"Achtung!", ist roaren der bullhorner, "outgetten der lead von der panzers und ausmoven der klunker elsewheren, schnell!"

Ist puschen und pullen der planehandler folken und der flightdekker folken midout budgen der sick flugenbird. Ist kallen der "tillie" but der krane ist slow gekommen.

Meanwhile, back ab der luft, der propellerkraten ist keepen up maken der passers mit waveoffs und ist outkallen, "Hey, when ist der flugendeck ben outgeklearen?"

Der piloter ist getten nicht reply.

Ist getten lower und lower der petrol in em tanken, und ist kommenzen der piloter to get shooken.

"When ist ready das bucket der bolters for der landisch?" ist gekallen. Und der birdenbarger ist finally upkommen an der radiosquawkker, "konserven der oktaners, bitte."

Ist der piloter konserven der oktaners mit lower die powersetten? Nein! Ist grinden around der pattern like gottem oktaners up der grometter. Soon der petrol ist so low der piloter ist geshouten, "Maytag, Maytag, ich bist maken der ditchensplasher besiden der ship!" Und so he does, just as der flightendekker ist ungefoulen.

Ist plenty wet und geschnorten der piloter, und ist schnarling der harsh komment about der incident. "Eine krock!", der piloter ist gesayen.

Die flightendekker folken ben alzo unhappy mit der outchewen by der airbosser, und der airbosser ist getten grosser outchewen von der kapitan. All ist screamisch at der odder und sayen if der klunkenheader piloter ben konserven der oktaners like he ben tolden, ist having enough for ein more passer. Der staffelskipper und der airgruppenkommander ist growlen und komplainen der karrier folken ist not knowen der tasks from der hole inem round down. All ist unhappy.

Himmel! Ist das nicht eine grosse kalamatie? Und who ist der bag geholden? Meinself am thinken der whole thing gesmellen like der olden fable where der folken ben so busy mit overputten der blamisch elsewheren, ist overlooken der real kausers. Ist smartisch? Nein, ist nicht! Ist better der honeybarger folken und der ironbirden piloters offknocken der squabblers und der nitpikken und make mit der proper doktriner und prozeiduren, den we is gotten der programmer gelokken, no?

WOOSHI — Weatherwise the evening was satisfactory for night flying and the AD squadron launched two flights. The naval air station was VFR and forecast to remain so, with numerous cumulus buildups in the area. Two of the ADs were on a local VFR flight plan and made a series of touch-and-go landings. Following the landings the pilots joined up and left the field, climbing in a northeasterly direction.

In order to keep clear of the clouds the ADs weaved around the buildups with numerous heading changes. According to the wingman they finally broke out on top of a scattered layer and leveled off about 9000 feet. Many buildups extended as high as 8000 to 9000 feet, and the two pilots maneuvered continually to avoid them and other higher ones. The moon was shining through a cirrus layer which made the cumulus clouds visible. Flight visibility was later esti-

mated to have been from two to five miles.

A little over half an hour after the two ADs had made their initial takeoff, a P2V departed from a military field approximately 100 miles to the northeast of the air station. The P2V was on an instrument flight plan and its destination was the naval air station.

Climbout was made to the assigned altitude of 8000 feet on a southwesterly heading with the plane flying in and out of heavy buildups. As the P2V entered a very thick cloud the copilot checked the running lights and then switched to "steady" so that the flashing lights would not bother the pilot.

Meanwhile the AD wingman recalls that the two attack aircraft continued northeastward, clear of clouds, and were heading toward what appeared to be a gap between two buildups.

The P2V broke out into the clear and the copilot reported that the pilot exclaimed an instant later "What's that?" and pointed toward the nose. *Dead ahead were red and green lights!*

Immediately the pilot of the P2V pushed over and the copilot saw the lights approach and flash past slightly above. From the weak light afforded by the moon, he recoghized the lights as belonging to a pair of AD's, apparently flying in formation.

Outside of a few rapidly thumping hearts and beads of cold sweat there was no personal injury or aircraft damage. There was however, an informal investigation of the incident.

Evidence indicates that the AD flight leader was very close to the minimum VFR conditions, and possibly was slightly below minimums in this particular case, by not maintaining 1000 feet vertical separation from clouds. Though he did not exhibit negligence it was felt he did exhibit poor judgment in proceeding into an area where weather conditions were marginal VFR if not IFR.

The Fleet Air Commander noted that present regulations require 1000-foot vertical and 2000-foot horizontal separation from clouds for VFR flight and in view of the rapid closing rates of today's aircraft, do not give the pilot sufficient early notification to avoid a possible mid-air collision under these circumstances.

FLAP RULE—During landing rollout the pilot of an AD-4 attempted to raise his flaps. By mistake he actuated the landing gear lever to the UP position. The landing gear collapsed and the aircraft skidded 40 yards before coming to rest.

This incident occurred because a pilot violated a local rule established for the express purpose of preventing such incidents! The rule states that no attempt to raise the flaps should be made until clear of the duty runway.

The old rule of never actuating the flaps by grasping the flap lever but the use of the flat open palm is a good one. Obviously, the safety release could not have been depressed and the wheel lever moved, had this rule been followed.

"... the old rule is [still] a good one ..."

FLIGHT VIOLATION

DURING the run in to the target on a scheduled low-level navigation flight, an AD-6 went below the prescribed altitude minimums and engaged one or more wires of a high tension transmission system.

The occurrence resulted from flight below authorized minimum altitude in violation of existing squadron regulations. Minimum altitude requirements will be re-emphasized in connection with low level flights and appropriate disciplinary action will be taken in the case of this and all future violations.

Commanding Officer's comments:

This squadron's instruction concerning low level navigation states altitude minimums of 200 feet over level terrain and 400 feet over rough terrain. These minimums have been emphasized at several all pilot meetings and as recently as last week. It is evident from this incident, however, that continued attention must be called to the dangers of low level flying and the necessary adherence to published procedures. The pilot has been interviewed by me and assigned the following duties:

(1) Re-read all squadron instructions and the AD pilot handbook.

(2) Submit a letter via the Operations Officer stating the above has been done and recommending procedures for eliminating accidents of this type in the future.

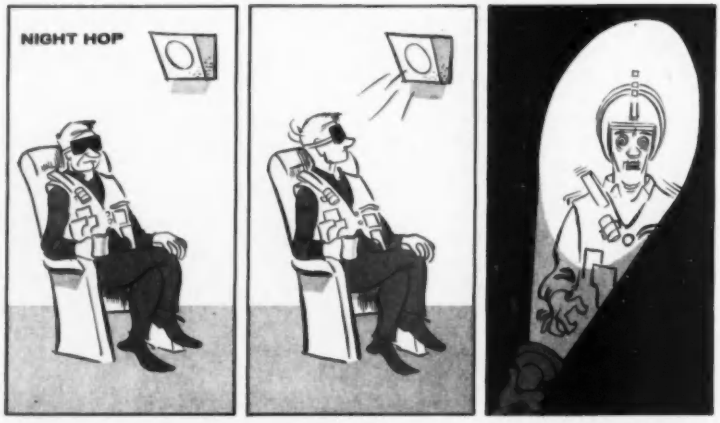
Continued from preceding page

RICOCHETING ROCKETS — An AD pilot was conducting 50-degree rocket runs firing 2.75" Folding Fin Aircraft Rockets (FFAR). He entered his second run at 8500', released the rocket at 7100', IAS 360 knots, dive angle 46 degrees. The hit was called at 4:30—71'. A pullout was executed using 4.5 G and the minimum altitude was 1000'. (All altitudes are above the ground). As the aircraft completed the recovery and reached a climbing attitude, buffet was encountered and the control stick jammed to the left side of the cockpit. The rudder and elevators functioned normally. However there was no aileron control. The airspeed indicator had also ceased operating. Using the aileron trim tab the pilot was able to control the aircraft. Another aircraft gave airspeed readings and a straight-in landing was made without further incident.

Cause of the occurrence: Ricochet of the rocket head, which damaged the wing and jammed the aileron controls. An inspection of the target area revealed that approximately 90 percent of the FFAR rockets are hitting the extremely hard ground and ricocheting into a loop flight pattern over the target. They then tumble to the ground about 500' short of initial impact point.

It was recommended that pilots initiate a turn immediately after release of FFAR to move away from the flight path of the ricocheting rocket.

The Endorser did not concur stating, "It is considered that a properly executed pullout from a 45- 50-degree dive while at the normal release altitude will provide adequate aircraft and rocket separation. In view of possible aircraft structural damage and the lack of continuity in the flight pattern the rolling pullout is considered unsafe."



Your plane is ready, sir—This way please.

LOST COMMUNICATIONS ON IFR — The aircraft cleared Bolling Air Force Base to Harrisburg State airport. Harrisburg weather was 800 broken, 1200 overcast with one and a half miles visibility in rain and light fog (Harrisburg ILS minimums 600 and 1½). The alternate was Allentown which had 1700 feet overcast with five miles visibility.

Coming up on the Harrisburg range, the latest weather was received as 500 overcast with one mile in rain and light fog. The field was forecast to remain below minimums for the next four hours. Further clearance was then requested to the alternate. Approach control cleared the pilot to Sanger intersection, to report Sanger. Arriving at Sanger, further clearance was received to proceed to Hamburg intersection.

Before reaching Hamburg the pilot called control but could not receive them. Attempts to contact ATC were unsuccessful on all appropriate frequencies. The pilot proceeded to Allentown to make good his ETA and letdown.

Arriving at Allentown the pilot heard CAA broadcasting in the blind that he was cleared for any type of instrument approach available. A standard ILS was completed to a successful landing. The pilot contacted CAA and explained the radio difficulty encountered. Investigation revealed a blown fuse in the transmitter circuit.

Although this incident, reprinted from the 1912th AACS squadron's Flight Service Bulletin, concerns an Air Force aircraft, the lost communications procedures are standard and apply equally to any aircraft on IFR along the airways—Ed.

P-BOAT SEAMANSHIP — A survey of five years of P5M-1 and 2 accident history published in a recent Naval Aviation Safety Center Accident Summary, includes some general conclusions and recommendations for the men who go down to the sea in "boats."

Point One under the general conclusions noted that seamanship is tested more severely by the long-hulled P5M than by its predecessors, the PBM and the PBY. Sea anchors are not as effective in turning the long hull, nor are the engines. Various peculiarities of the electrical system can affect propeller reversing and hydroflap operation at critical positions during buoy approaches.

Takeoff at a high gross weight presents a period between coming "on the step" and becoming airborne that is potentially dangerous. This potentiality can be made an actuality by conditions that, normally, are considered of minor importance (moderate swell or unsteady wind) during a low gross weight takeoff.

The P5M electrical system is not thoroughly understood by pilots, plane captains, and electrical panel operators.

Ditching techniques, in two accidents, were the proximate cause for the seriousness of the accidents, if not the sole cause.

General Recommendations

Conservative seamanship is the best approach to the buoy. With the sea and bow anchors rigged and procedures established for a "no-ICS" situation, the plane commander will be ready for unexpected hydroflap or propeller reversing failures. "Taking it around" for another pass is the only satisfactory way to salvage a poor buoy approach.

Pilots and crewmembers cannot operate the P5M safely without understanding the electrical system. This holds true of the other systems also, but the electrical system problems which have figured in accidents frequently stem from ignorance or misunderstanding of the system on the part of personnel aboard the aircraft. Thorough NAMT checkout should be a part of all P5M training along with OFT emergency procedures for coping with malfunctioning electrical circuits. Radiomen should receive the complete NAMT electrical maintenance course.

Seadrome operations are an integral part of P5M training and deployment. Seadrome facilities should be checked regularly and maintained in optimum condition. During landings and takeoffs, the problem of debris entering the sealane at night is not near solution. Seaplane boundaries should be easily identified by day and night to pilots, airborne or waterborne, and confusing buoys, pylons, and lights should be changed or eliminated. Qualified plane commanders should be used to survey seadrome conditions where lack of protection and tricky winds may hazard high gross weight takeoffs.

Single-engine characteristics and capabilities should be thoroughly understood by all pilots. The reduction in drag with the aircraft in ground effect should be understood and appreciated. A suitable jettison bill and day- and night-ditching procedure should be familiar to all crewmembers.

Several other Accident Summaries now in the mill should be out by the time this issue reaches you. These include: F8U, FJ, F11F, A4D, AD, S2F and helicopters.—Ed.

The Wheels Watch has been on the job for over a year now, and he's still saving pilots from making sparks on the runway. In submitting its latest saves, NAAS El Centro also indicated that *seventeen* total saves were accomplished there in Calendar 1957.

Here's our latest list of men who deserve a pat-on-the-back—have you sent in your nominations?

Name	Station	Acft	Date
Julian, L. A., AC2	NAS Miramar	F9F	9/8/57
Hansen, H. N., AN	NAAS Brown	F9F-6	10/1/57
McNamara, J. A., ACT3	NAS Hutchinson	SNB	9/21/57
Doramus, M. D, ACT3	NAS Hutchinson	P2V	10/9/57
J. W. Lazzo, CAPT USMC	MCAS Cherry Point	F9F-8	10/11/57
M. Z. Seaman, MAJ USMC	NAS New York	F9F-6	12/28/57
Halladay, G., AC2	NAS Moffett	AD-7	12/20/57
Langley, B W., AN	NAAS Cabaniss	AD	1/30/58
W. V. Best, LTJG USNR McAlister, R. E., ADAA	VF-13	F9F-8	1/10/58
W. V Best, LTJG USNR McAlister, R E., ADAA	VF-13	F4D	1/10/58
Smalldone, M., DC2	NAS Denver	F9F-6	1/18/58
*O'Quinn, P. E., AC3	NAAS Cabaniss	AD	1/21/58
R. C. Bagley, 1/Lt USMC			
Baumgartner, L. F., SA	NAAS El Centro	FJ-4B	1/15/58
Gemoets, A. B, AC3	NAAS El Centro	FJ-4B	1/20/58
LeClair, W. R., AC3	NAAS El Centro	AD-5N	1/22/58
Taylor, D. L., ACAN	NAAS El Centro	F9F-8	1/29/58
Barger, R., CPL, USMC	MCAS Kaneohe	FJ-4	1/16/58

* 2 previous saves

BOX SCORE

Wheels-up landings: unintentional, pilot-induced

Feb 1957	**1**
Feb 1958	**1**

WHEEL SAVES

Notes from your flight surgeon

Early RAD

AN F3H-2N crashed into the water following engine failure.

Included in the list of possible causes of the failure are fuel starvation and compressor stall. Either of these may have resulted from the high speed, high performance, low altitude flying immediately prior to the accident. Some witnesses described this as an "air show", and one thought it was planned for some visitors. He mentioned that acceleration in the turn was sufficient to condense vapor on the wing tips.

The MO notes that elation over having just received RAD orders and knowledge that he would probably not fly this aircraft again almost certainly prompted his fatal aerobatic display. The pilot, although skilled, had demonstrated poor flight discipline and was, within the past 6 months, grounded for this reason.

Accidents occurring on so-called "last flights" are numerous; skippers, ops officers, please note.—Ed

Gibson Girl

The AN/CRT 3 emergency transmitter, ("Gibson Girl") transmits on 8364 and 500 KC.

During maintenance and testing of this transmitter, it is essential to keep the radio frequencies "at home" and not scattered over the globe. Transmission of these emergency frequencies for testing purposes is a far greater offense than turning in a false fire alarm. These frequencies travel far and wide and are received by multitudes who are manually and automatically guarding these frequencies.

Testing in a screened room with appropriate dummy load antenna is an ideal approved method. Any other accepted method should be thoroughly scrutinized for possible RF leakage, with resultant "CRY-WOLF" repercussions.

Any time 500 KC and 8364 KC signals are transmitted, they are "FOR REAL."

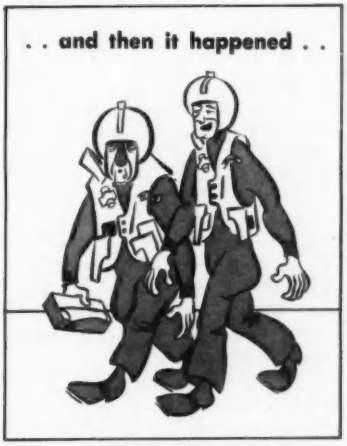
Don't Loop It

ON THE final of a carrier landing the F3H-2N had a compressor stall. The pilot couldn't make it to the deck, turned away to avoid hitting the ship, and hit the water in a flat attitude.

Uninjured, he climbed out and tried to remove his chute. However the tube from his bailout bottle was connected to his fitting on the oxygen mask hose thereby extending across the pilot's chest from right to left. The strap on the far end of the oxygen mask hose (designed to prevent injuries due to the flailing end) was connected to the left chute chest strap, being threaded through the harness snap ring. This created a closed loop across the pilot's chest, making chute removal difficult.

Once free of the chute the pilot had no problem entering the helicopter sling and was rescued.

Pilots are cautioned against fastening the end of their oxygen mask hose to the left chute strap. Simply looping the small nylon hose strap around the chute buckle itself will provide the same hose restraint and will free immediately as the buckle is opened. If it should catch on the buckle it will still be on the right side of the chute harness and the cross chest loop will not be formed.



"C'mon, we're late, just hold your nose and blow hard . . ."

From an Accident Brief

THE MEDICAL Officer's Report states that it had been seven hours since the pilot had eaten and "It is believed that hypoglycemia may have been a minor contributing cause." While it may have been only a minor factor in this case, it is not considered good practice to launch a pilot on a scheduled hour and a half night flight when he has not eaten in seven hours.

Out of Gas?

The P2V-5F lost power on one engine. Next the pilot noticed that the jet engines were not developing power. Three minutes later the last engine quit and a wheels-up landing was made in a plowed field.

Turns out the aircraft had plenty

Continued next page

Notes from your flight surgeon

Continued

of gas in the main tanks but the engines stopped from lack of fuel.

When the preflight check-off list was read out calling for fuel selectors 'Normal and Direct' the pilot did not make a sufficiently thorough check to determine their actual position. When the emergency occurred he took no effective action to restart the engines because he had a fixed notion that the selectors were on the main tanks which would not have run dry in the short length of time the plane was airborne.

Nine Hats

THE pilot landed his F9F-6 wheels-up, after one wave-off and go-around. He was not injured.

Inquiry showed that he had been, for nine months, the only officer at his reserve station fully qualified and fit to fly the main operational craft used there.

This meant he assumed the major responsibilities involved in checking out reservists in the aircraft and supervising their training. For part of that time he was the only officer in the training department, and wore nine hats. as training officer, flight training officer, VF-jet training officer for two squadrons, Fasron liaison officer, VR-liaison officer, CIC liaison officer, AI liaison officer, and safety officer and instrument flight training officer. His work day has not infrequently been as long as 16 hours. He had 12 hours duty and 5 flights in the last 24 hours.

In the medical officer's opinion, "fatigue resulting from excessive work and responsibility" contributed to this accident!

Four Hours Sleep

This pilot was a weekend warrior who came from the East Coast to California to ferry a plane back. He was in the air as a passenger 16½ hours and during that time got about four hours sleep in a reclining chair.

It is calculated that four hours sleep was all he had in the 35 hours preceding his takeoff in the F9F-6 from which he ejected. He was at the controls five minutes when the plane went into a left spin from which he was unable to recover.

He escaped with minor scrapes and bruises by ejecting. He had a total of three ejection seat checkouts and is emphatic in stating that this training helped him greatly. He had trouble finding the handle for the face curtain, let the lap belt release automatically, and opened the chute manually, after feeling first on the wrong side for the ripcord. He thought he was at 3000 or 4000 feet but other evidence indicates he was considerably lower.

It appears that he escaped by the skin of his teeth, and fatigue was probably a factor in his control difficulties and his equipment confusion.

Liquid Oxygen Odors

RECENT reports of liquid oxygen contamination indicate that in rare instances odors have been experienced in liquid oxygen breathing systems.

The Chief, Bureau of Aeronautics requests that fleet activities be instructed to follow procedures contained in ACSEB No. 7–57 of 1 March 1957. This will allow standardization of sampling, mode of reporting, etc.

For standardization of sampling, the odor test should be performed on all source deliveries to the trailers or storage tanks or at weekly intervals.

As a precautionary measure, all liquid oxygen equipment should be drained and purged every 3 months and a record of these purgings should be maintained and equipment suitably tagged. This will prevent the build-up of contamination in liquid oxygen.

See BuAer Clothing and Survival Equipment Bulletin No. 5-56 and observe all safety precautions established for handling liquid oyxgen.

Flight Restrictions Following Blood Donations

THE following excerpt concerning flight restrictions following blood donations is taken from OpNav Instruction 3740.7:

• The giving of blood has become a commonplace and highly important practice. Adequate stores of blood and plasma are essential to national defense. Naval personnel should be encouraged to participate in authorized blood donor programs.

• Although blood donors suffer no ill effects and the amount of blood donated is quickly replaced by normal bodily processes, the aviator is exposed at all times in flight to unusual demands for oxygen-carrying blood. Hence, the following restrictions should be placed on pilots and crewmembers who have donated blood:

a. Flying personnel should be

grounded for *four* days after donation of 500 cc. of blood.

b. Operational commands should consider a further limitation in flights above 35,000 feet altitude, night flying, or aerobatic or gunnery tactics for a period of *one week* after blood donation.

c. In no instance should pilots or aircrewmen flying in combat or with operational groups off aircraft carriers donate blood within *four weeks* of such expected flights. This recommendation is made largely because of possible lowered resistance to fatigue or in the event of injury or illness closely following blood donation.

All aviators are encouraged to read this OpNav Instruction in its entirety—it contains much valuable information!

Ground Resonance

GROUND resonance is a violent lateral oscillation which may effect certain helicopters just prior to landing. It can leave pilots in somewhat the position of dice in a shaker.

In this case the HUS-1 touched down, commenced to sway, and went into the violent oscillation with forces so extreme that neither occupant was able to keep his feet on the rudders nor hands on the controls. At the peak of the oscillations the helicopter tipped on its side, and both pilots climbed out.

The copilot had cuts above his shoe tops; the pilot reported the motion had been so violent his vision blurred. Both helmets showed indentations and scratches from bumping against each other.

The pilot was wearing gloves, flight suit, winter flight jacket and Mae West in addition to the H-4 helmet. He feels the clothing lessened his bruises and the H-4 saved his life. He also stated that "without shoulder straps and safety belt being on and tight, there is no doubt in my mind that the accident would have been fatal. A motion that violent would probably have thrown me out of the aircraft."

The copilot and medical officer also credited the safety equipment with prevention of serious injury or fatality.

Photo Finish

IN AN EFFORT to take some personal photos an AD pilot overplayed his luck.

He was flying at the assigned low altitude when, his wing man reported, his plane touched the water, recovered sharply, and then stalled into the water as the pilot called "mayday." No escape attempt was observed.

Later examination of the wreckage showed the pilot was wearing a personal camera containing negatives, three of which must have been exposed in the last two or three minutes before the crash. Two *later* ones were ruined by salt water.

A mark on the gunsight matched a mark on the helmet visor and it appears the pilot was stunned so that he was unable to attempt an escape from the plane. The reason he hit the gunsight is apparently because his harness was slack, possibly to facilitate picture-taking.

The trim button showed a tendency to stick nose-down but was easily overpowered by the stick. If the pilot had been concentrating on the plane he would have noticed the condition and been able to recover in time.

This quick fit seat type chute has ACSEB 27-57 incorporated — can you spot this feature? What capabilities does this feature provide?

A second ripcord and ripcord housing cover, right, indicates this chute is equipped with automatic parachute opener. On ejection over 10,000 feet the chute will open automatically at the preset altitude of 10,000 feet if the lap belt is operated automatically. For details read ACSEB 27-57.

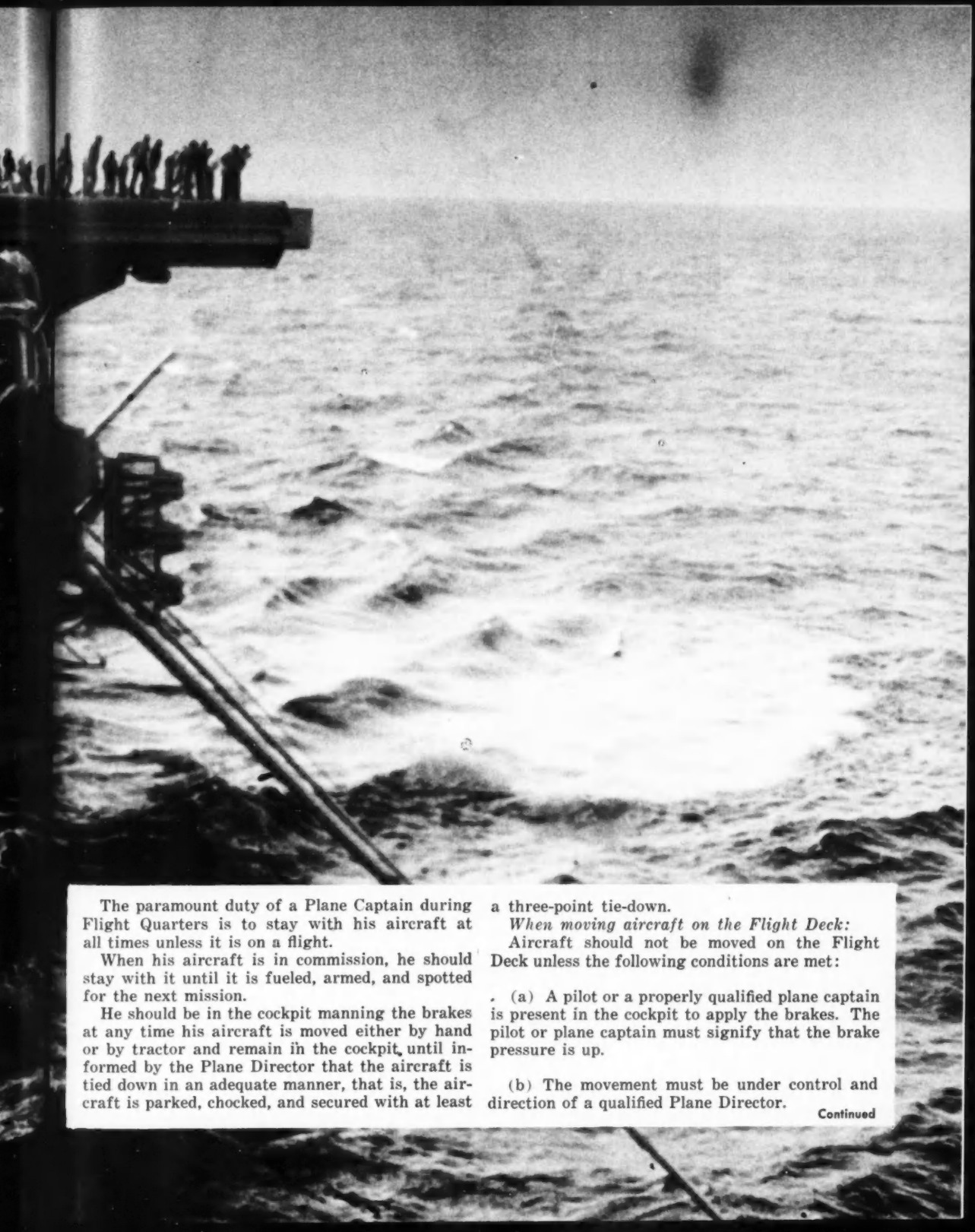
LETDOWN

"I climbed to 5000 feet and did a normal ejection. The rest of the trip was uneventful."

The loss of several men, a higher number of aircraft, and many more near-losses, over the side of carrier flight decks prompted a survey of these mishaps, their causes and possible methods of prevention. Analyzing 38 reports of such flight deck accidents, the following factors figured in nearly every case.

- *improper coordination between ship's movements and aircraft respot.*
- *leaving cockpits unmanned before plane is secured.*
- *brake failure*
- *improperly securing aircraft.*
- *director's signal too late or brake rider not receiving signal.*

OVER THE SIDE



The paramount duty of a Plane Captain during Flight Quarters is to stay with his aircraft at all times unless it is on a flight.

When his aircraft is in commission, he should stay with it until it is fueled, armed, and spotted for the next mission.

He should be in the cockpit manning the brakes at any time his aircraft is moved either by hand or by tractor and remain in the cockpit, until informed by the Plane Director that the aircraft is tied down in an adequate manner, that is, the aircraft is parked, chocked, and secured with at least a three-point tie-down.

When moving aircraft on the Flight Deck:

Aircraft should not be moved on the Flight Deck unless the following conditions are met:

(a) A pilot or a properly qualified plane captain is present in the cockpit to apply the brakes. The pilot or plane captain must signify that the brake pressure is up.

(b) The movement must be under control and direction of a qualified Plane Director.

Continued

over the side

Continued

". . . The ship was in a turn to starboard and the tractor was disconnected from the aircraft before it was moored . . ."

"As the ship heeled to starboard the aircraft rolled and slid across the deck. The pilot left his aircraft without anyone in the cockpit to man the brakes . . ."

". . . the aircraft was not adequately secured to withstand combination of winds and ship's maneuvering . . ."

". . . during ship's turn to port heavy rolls were encountered . . ."

Close adherence to these recommendations should prevent accidents of this type.

- *The bridge should always warn Pri-Fly Control, who in turn should pass on to flight deck and hangar deck all impending turns.*
- *Aircraft should never be moved unless a pilot or qualified plane captain is in the cockpit.*
- *Pilot should remain in the cockpit until the plane is secured with mooring reels or until relieved by the plane captain.*
- *Plane captains should meet their planes as soon as possible after landing and place mooring reels.*
- *Aircraft should not be moved until pilot or plane captain signifies that brake pressure is up. Do not rely on aircraft brakes alone—have chockmen in ready position. Plane captains should keep their hand on the emergency brake (air bottle) handle. If brakes are faulty aircraft should be moved only in emergency.*

The assignment of two men as tie-down men leaves less danger of improper tie-downs and also assures the brakes will never be unattended before the plane is tied down.

- *Directors should use both audible and visual signals when there is a possibility of the brake rider not receiving the signal.*
- *Brake riders should apply brake whenever a signal is heard no matter how faint or distant it may sound.*
- *Plane directors should be fully instructed in flight deck handling and keep alert.*

FROM THE GROUND UP

Selected Forced Landings,
Incidents,
Ground Accidents,
Notes and Comments on
Aircraft Accidents

LAP BELT CARTRIDGE—Attention is invited to the Safety of Flight messages warning against incomplete compliance with ACSEB 8-57: Installation of the Mk 3 Mod 0 cartridge with blunt percussion type (old) firing pin renders auto lap belt device inoperative. *Do not* install Mk 3 Mod 0 cartridge unless new stab type needle nose firing pin is installed simultaneously. New stab type pin will work with either Mk 1 Mod 0 or Mk 3 Mod 0 cartridge.

If new stab type pin is unavailable, order and install complete safety belt/auto opener device, Federal Stock Number R1680-545-9425-GF-50.

If combination of old firing pin and new cartridge is installed, then safety belt and parachute must be operated manually.

Note: Copper safety wire (.040), Spec. QQ-W-341, used to safety actuating arm of the actuator barrel as required by Tech. Order 2-56, in some instances has not been available. BuAer Dispatch 241942 of Feb. 1958 authorizes the following substitute: Copper wire FSN GG6 145-236-9491 (Mil. Spec. W-3861).

FROM THE

GROUND UP

Continued

SEA LANE SWEEPING—A P5M-1 in the San Diego area recently struck a submerged object during either takeoff or landing. The keel was split from station 435 to 440 on the port side of the cap strip and the hull sustained superficial scratch damage.

This accident occurred even though the squadron involved has the area swept by competent personnel in a station crash boat prior to permitting takeoffs and landings. Frequent sweeps are made in the sea lane as long as operations continue; and, whenever debris is reported it is promptly removed. Continuous patrols, during the periods the seadrome is not in use, provide additional security against floating objects in and adjacent to the sea lanes that might be overlooked during a routine sweep prior to takeoff and landing.

Of note is the approach to the floating log problem at NAS Whidbey Island—the station helicopter is used to locate logs.—Ed.

SIMPLE DIMPLE CRIMPLES—No one who has ever owned a car is a stranger to the scratches, nicks, and dents that suddenly show up on a fender, hood or rear deck. Just as carelessness in handling is the cause of these, so is it the cause of dents, nicks and scratches that show up on an aircraft hangared "safely" or sitting out on the line.

Sometimes aircraft incur minor damage "jes sittin" in the hangar or on the airport apron. Basic cause, aside from carelessness, is the movement of aircraft within the limited area of a hangar or a parking apron. Very often this type of damage is "brushed off" by the offending plane handler as a mere bump or a slight scratch of too little consequence to need mentioning. But if pitot tube, for example, took the bump, the consequences could be serious. A small dimple in the vicinity of a static source can throw off altimeter and airspeed readings. Such mishaps can cause fatal accidents. Here errors of omission prove greater than those of commission.

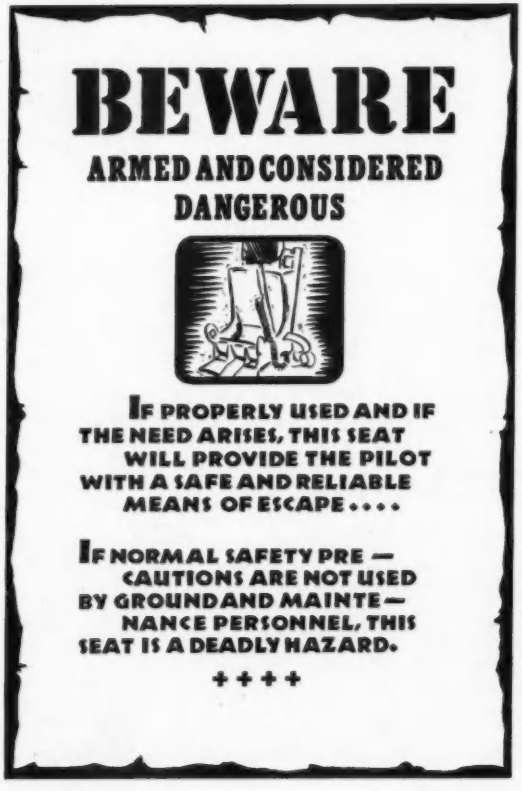
Crew chiefs and linemen are cautioned to be on the alert for such unreported mishaps and to be watchful of the movement of aircraft within a hangar or on the line. A big dump from a slight bump grows if unreported.

SHOOK UP, BUT GOOD—An F2H-3 had been given the light-off signal prior to launching. After light-off and a cockpit check, the pilot checked to the rear of the aircraft and requested a full turn-up.

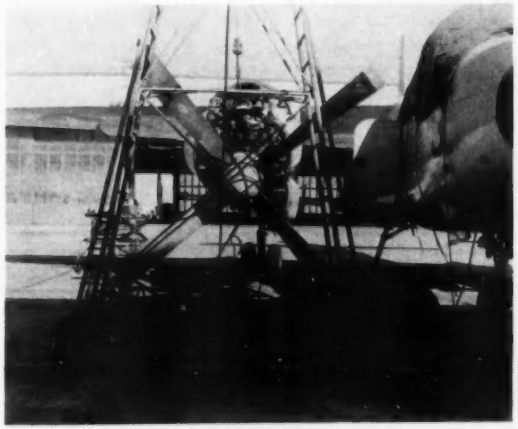
While the aircraft was turning-up at 100% RPM, a 2nd Mech went under the wing and unplugged the external starting power leads. He came out in front and to one side of the starboard intake. As he straightened up, he was sucked into the intake hitting his head on the butterfly valve. He held on with both hands and kept his eyes shut. The pilot noted a drop in his starboard RPM to 80% as two men grabbed the mech's ankles and tried to pull him out of the intake.

As the pilot was being given the "cut" signal by the director, he saw the man in the intake. Both engines were secured and the mechanic rescued, suffering only minor injuries.

The men responsible for removing the intake screens in this case, had a practice of removing them at the yoke if possible, and otherwise when the aircraft was positioned on the catapult. The shaken mechanic admitted that while he was in the intake all he could think of was the numerous times he had been warned about getting in the danger zone near the intake.


BEWARE
ARMED AND CONSIDERED DANGEROUS
IF PROPERLY USED AND IF THE NEED ARISES, THIS SEAT WILL PROVIDE THE PILOT WITH A SAFE AND RELIABLE MEANS OF ESCAPE....
IF NORMAL SAFETY PRE — CAUTIONS ARE NOT USED BY GROUND AND MAINTE — NANCE PERSONNEL, THIS SEAT IS A DEADLY HAZARD.
++++

EQUIPMENT MAINTENANCE—While removing the starboard engine of an AJ-2 for re-installation on another aircraft, the man on the A-frame winch increased strain on the derrick to permit the engine to swing free of its mounting. At that moment the winch locking device failed and the engine swung down from the nacelle with propeller tips resting on the derrick frame. An attempt by the operator to grab the rotating handle, resulted in a slight injury to his left hand.



Deterioration of "A" frame and carelessness of the operator combined to make damage to propeller blades beyond repair.

Following the accident, the A-frame winch was disassembled and inspected by the O&R Department. It was found to be worn beyond repair, and was replaced.

Carelessness on the part of the winch operator was considered to be the primary cause of the accident. He was operating the winch in the high range, and failed to ensure proper engagement of the pawl stop. *Supervisory error contributed to the accident in that the winch was allowed to deteriorate to the extent reported.*

In removing the engine from the AJ-2, it is feasible to leave the propeller on the engine. *However,* this procedure requires the stationing of a man by each of the lower propeller blades to prevent the engine from tilting forward. In view of the precarious position of these men in the event of hoist failure, this procedure should be followed only in the most exceptional circumstances.

COCKPIT CLUTTER—An F4D-1 received overhaul damage on an intentional wheels-up landing. The pilot was unable to lower the gear because a G-suit hose fitting left adrift in the cockpit had lodged in the landing gear control mechanism.

DON'T POINT—An airman drove a tractor around the nose of an F9F-8 facing the port intake duct stopping to ask the plane captain if there was any gear to be picked up. No gear was available so he placed the automatic gear shift in reverse and started to back out. In the process of turning the wheel his hand slipped off the wheel and shifted the selector to the drive position. Before the brakes could be applied the tractor struck the underside of the port wing stub. The damage was approximately a 12-inch break in the skin under the port intake duct.

Faulty Equipment—

A technician driving a flatbed vehicle to a parked SNB approached the aircraft from the port quarter. The brakes failed to respond because of a faulty master cylinder. The man cut the ignition, but the flatbed struck the SNB's port wing at the flap and aileron junction.

An airman delivering a parachute to a TV-2 experienced brake failure as his flatbed vehicle approached the aircraft. The operator abandoned the vehicle an instant before contact.

A jeep was parked facing the port side of an F3H-2M to afford light for the pilot to disembark and for crewmen to postflight the aircraft. The driver positioned the throttle, set the hand brake, put the gear shift in neutral and left the vehicle to assist under the aircraft. The driver saw the jeep moving forward and shouted a warning. The other stood up when he heard the driver's shout and was pinned between the vehicle and the port wheel well door of the aircraft suffering serious injuries.

With the exception of first case cited here, equipment failure was a factor in each of these acci-

The injured man was pinned between the NC-4 and aircraft.

FROM

THE

GROUND UP

Continued

dents, the real cause was pointing the vehicle at the aircraft. One command instructed its plane captains and drivers that *unless positively necessary no vehicle will be pointed fore or aft toward the aircraft.* It's as simple as that.

IN-FLIGHT EXPLOSION—The oil tank cap came off an F9F during flight allowing oil to be drawn into the plenum chamber. The explosion originated in the cooling air blast tube to the generator, then spread to the upper plenum chamber.

This command has re-emphasized to all pilots the importance of preflight inspections and that positive action by the pilot is required to insure the oil cap is locked on the filler neck.

INVESTIGATION OF EXTERNAL OIL TUBES — R3350-26WA ENGINE—The Wright Aeronautical Division has recently concluded its investigation of the front and rear left-hand external oil tube assemblies that were connected with an AD-4B aircraft accident.

The tubes were believed to be the heavy wall front and rear tubes, 429767 and 429768, but inspection showed them to be of the old thin wall (.031-.039" thick) design (P/N 425663 rear, front undetermined). Visual examination of the fractured surfaces of both parts revealed that they had cracked from excessive torsional stresses brought on by prestressing of the tubes. The prestressing was most probably the result of improper handling and/or improper installation.

It is suggested that personnel concerned with handling or installation of external oil tube assemblies be properly briefed in the correct procedures to be used in their handling. Extreme care is necessary in their installation as a tube installed in a cocked position will quite easily develop an undesirable stress condition.

Heavier wall tubes, Part Nos. 429768, and 429767 have been provided as a measure for alleviating oil line breakage problems, but it must be remembered with these also, that the care taken in assembling the lines is the main factor in their continued satisfactory performance.

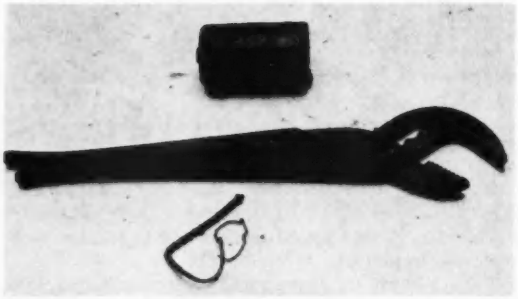
RADAR RADIATION CAUSES FIRE—Returning from a routine flight, a ZPG-2 experienced what seemed to be an electrical fire. In-flight investigation indicated that the fire came from below the deck adjacent to the main inverter.

The deck plates were removed and CO_2 was discharged into the radome. Shortly thereafter the fire subsided. The airship returned to base and made a normal landing.

Later, removal of the radome fairing showed that oil from the bilge had seeped between the radome and the fairing and had accumulated in the low spot between them. A pair of pliers, a 1.5-volt battery, and several small pieces of wire were also found in this area. Charred portions of the radome and fairing described the path of the fire.

Investigation indicated that the fire was located in the dead space bounded by the car bilge bottom, the radome, and the after radome fairing. It was determined that the fire exhausted itself of oil and/or air and the discharged CO_2 did not reach the area.

Such objects as steel wool and aluminum chips can be set afire by the radiation pattern of this



Metal objects in blimp's bilge were the cause of in-flight fire. The radiation pattern of the ship's radar either set fire to bits of wire or caused arcing in the pliers' handles.

type radar. Metal objects a short distance apart (such as the handles on a pair of pliers) tend to arc when subject to direct radiation of the radar. The radar observer reported that shortly before the time of the fire the antenna had been stopped for approximately 10 minutes facing aft and was radiating.

It was, therefore, concluded that the intense radiation produced by the radar antenna in a stationary position caused the fire, either by producing incandescence in the bits of wire or arcing of the handles of the pliers.

It was recommended that an access door be installed in the after radome fairing so that visual inspection for the presence of oil or gas seepage or foreign objects can be made. It was further

recommended that sufficient overboard drains be installed in the bilge directly above the radome and radome fairing to provide overboard drainage for combustible liquids.

Ed's note—Tests conducted by Lockheed Aircraft Corp. with the AN/APS20 E radar showed, among other things, that it would ignite dry steel wool at a distance of 45 feet. These tests are discussed in the January '57 issue of APPROACH.

REPORT OVERTEMPERATURE AND OVERSPEED—Reports from O&R's show that an increasing number of jet engines are being received for overhaul which have been operated in an overtemperature condition. In most cases there is no entry in the engine logbook to indicate the amount or duration of overtemperature which the engine experienced.

Now this is not only bad—it's extremely dangerous. Overtemperature is by far the most serious deteriorating agency acting on the turbine assembly. The condition is compounded when accompanied by an overspeed. During overtemperature, the turbine blades are subjected to a "thermal-shock" i.e., a sudden increase in the temperature on the surface of the blades. The resulting large temperature difference between the blade surface and core can produce minute cracks in the blade. These cracks continue to grow larger with each subsquent overtemperature. In addition, the first crack is the opening wedge for a progressive fatigue failure. The ultimate result is failure of the turbine blade(s). This situation manifests itself to the individual in the cockpit by vibrations, loss of thrust, high or excessive tailpipe temperature . . . all those unpleasant things that you don't want to happen while you are flying.

The odds that this will happen can be slanted in your favor by the application of a few simple procedures. The first, obviously, is to not overtemp or overspeed the engine. Just as obviously, this is not always easy to do but there is a practical solution. Each time an overtemperature and/or overspeed condition is observed by pilot or mechanic, log it on the aircraft yellow sheet and include the temperature, RPM and duration. This information in turn should be logged in the engine logbook.

By promptly and correctly reporting each overtemperature and/or overspeed condition, maintenance personnel can then perform thorough inspections to determine the degree and condition of damage. By this action a future complete engine failure can be prevented.

It should be emphasized to all concerned that overtemperature and overspeed conditions *do* damage jet engines, the degree of damage being dependent upon the amount of overtemperature or overspeed. Engine failure usually occurs at some future time. *When* it occurs depends on the degree of damage and operating conditions.

By not reporting overspeeds and overtemps *as they occur*, you are passing along a dangerous condition which could very well "dig a hole" for a friend. *NavAirPac AvSafBul.*

For more on this subject see "Why Log Overtemps," Feb 1957 APPROACH—*Ed.*

KNOCKOUT GAS—A mechanic was overcome by gasoline fumes during hand mopping on inside surfaces of an AJ-2 tank. The tank had been previously flushed with air, but enough vapor remained to make it necessary for the three men doing the work to 'come out for air' at frequent intervals. After less than an hour, one of the men didn't come out, and was removed nearly knocked out.

Investigation disclosed that the mopping operation is routine and, while there are air-moving devices available, there was no use of suitable respiratory protection. Maintenance personnel stated that airline respiratory protection was entirely unknown to them and asked that the safety division instruct them on the proper use of respirators.

CLEANING GASOLINE TANKS—For safety, a recommended standard practice before cleaning gasoline tanks should include the following steps:

a. Aerate the tank by placing the suction end of a strong exhausting device as far as possible within the tank. Continue for at least a half hour or until a standard explosive meter shows no explosive concentration of vapor.

b. Mop as much as possible from outside the tank with long-handled mops, and with the suction still on. Only organic type cartridge respirators will be required for this.

All activities concerned with cleaning gas tanks, aircraft or otherwise, should have the necessary respiratory protective equipment as well as other accessories such as safety lights, gloves and coveralls. Breathing gasoline fumes has been known to result in fatalities.

STOW IT RIGHT—Unless adequately fastened down, such things as luggage, books, tools, rafts, maps and chutes can become misguided missiles that can inflict injury and damage when turbulence is encountered.

MURPHY'S LAW

★ *If An Aircraft Part Can Be Installed Incorrectly, Someone Will Install It That W*

WHEN MECHANICS of HMR (L) 262 installed a new fuel pump *backwards* on an HRS model 'copter, they found that a logistically versatile pump made them victims of *Murphy's Law*.

Captain P. W. Neisen, aviation safety officer of this Marine unit explains why and how this situation happened and why it can happen again:

(1) The same pump is used for both engine-driven and auxiliary motor-driven pump.

(2) The engine drive rotates in one direction, and the auxiliary motor drive rotates in the *opposite* direction. Consequently, the relief valve assembly must be removed and turned 180 degrees, then reinstalled when this pump is used on the auxiliary motor.

(3) All pumps in supply are assembled to rotate in the same direction as the engine drive.

The situation was first noted in early 1957 when a fuel pump was installed on one of our aircraft, and when checked, it was found to be inoperative. This happened a second time. Here are the situations as experienced by our engineering department.

Case 1. The pilot started the engine, checked the electric-driven fuel pump before engaging, and the engine quit from lack of fuel pressure.

Case 2. When the pilot tried to start the engine, he had no pressure from the electric driven fuel pump.

In both cases, this indicated the failure of either the engine-driven fuel pump, or the electric-driven fuel pump.

Engineering department then ordered another pump to replace the defective one, (R 2910-373-8744-ZPED). The same pump is used for both engine and auxiliary drive.

Note that if this pump that failed is the engine-driven pump, there are no complications, but if it is the electric-motor-driven pump when the installation is complete, there still is no fuel pressure.

When the pump drive is reversed, the fuel pressure is applied to the wrong side of the valve not allowing it to open, therefore, getting no fuel pressure in the "out" line.

When the pump is removed from the motor, the fuel plumbing is too short to be changed from side to side, therefore always being connected to the same side of the pump.

The clearances of the area in which the pump operates only allow it to be installed one way, so the entire pump cannot be turned 180 degrees to comply with instructions on the metal plaque.

To remedy this situation, they must (1) Remove the pump, (2) Cut the safety wire and remove four screws which hold the pressure control unit on, (3) Remove the unit and rotate it 180 degrees so as to direct the fuel in the right direc-

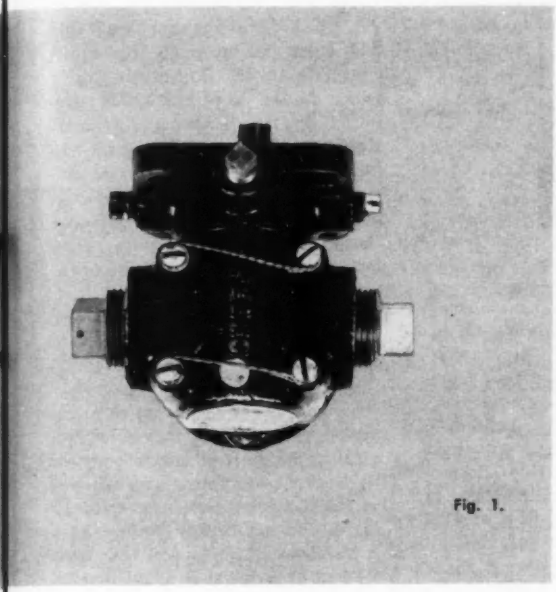


Fig. 1.

Fig. 2.

tion to the pressure valve, (4) Replace screws and safety wire. (See photo No. 1.)

The pump now acts normally.

There is no place in the current instructions or publications that indicate that this procedure is necessary. The only place that indicates this change, is on the head of the relief valve assembly; a small metal plaque which states, "At installation, assemble pump with this side of valve next to inlet port". This is easily overlooked. (See photos No. 2, and No. 3.)

This squadron has put out a maintenance instruction to prevent any further recurrence of this situation.

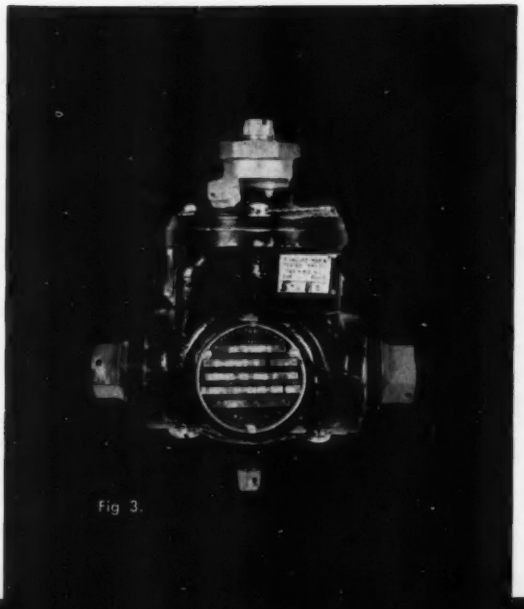


Fig 3.

THAT'S MURPHY'S LAW—Although Murphy's Law applies strictly to aircraft, it also holds true in other fields. An Associated Press story demonstrates this.

A married couple received an electric blanket for Christmas. Mrs., who shivers more than most, set the control on her side for moderate warmth. Her husband, who's somewhat warmer natured, turned the heat low.

Mrs. subsequently switched on full heat—and shivered. Her husband, growing too warm, turned off the electricity. Finally they gave up and snuggled back under an old, non-electric blanket.

Daylight came, and examination disclosed—yep, that's right—Mrs. side controlled her husband's share of the blanket, and vice versa.

TIP TANK

MISCELLANEOUS AVIATION SAFETY TIPS . . .

Lighter-than-Air Aircraft Over Water

All pilots are cautioned of the hazard of flying under lighter-than-air (LTA) Aircraft over water. SONAR cables and/or lines for picking up water ballast may be trailing beneath this type aircraft at any time over such areas.

Av Gas—No Cleaner

By their quick action members of an R4Q check crew extinguished a gasoline and oil fire and undoubtedly saved a half million dollar aircraft. This quick action is to be commended. However, the mechanics who extinguished the fire were the same mechanics who started the fire by using improper procedures. They used aviation gasoline to clean a starter.

F9F Duct Covers

IT WAS suggested that units flying F9F model aircraft tie duct covers together to prevent inadvertent ingestion of one of them not removed during preflight inspection. MARTCOM.

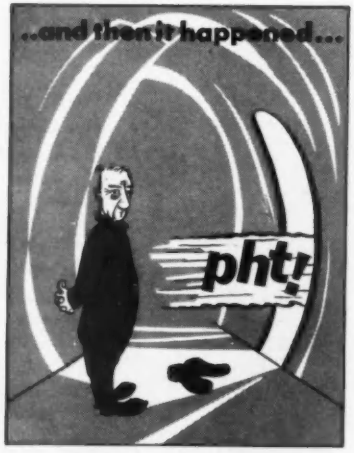
ComNavAirPac Notice

ALTHOUGH the prevention of all engine malfunctions or failures requires more than conscientious effort at the operating level, it is interesting to note that several Pacific AD squadrons have successfully completed deployments without a single engine failure or removal during the entire cruise.

In addition, many activities have operated AD aircraft for thousands of hours, over periods of several years, without experiencing an in-flight engine failure. *These activities are known to have strong command administered operational and maintenance training programs.* The review of DIRs from these activities revealed little or no evidence of faulty maintenance or operating procedures — ComNavAirPac Notice NavAer 02.

Facility Charts

THE ECONOMY knife has slashed in half publication of radio facility charts. These charts, will henceforth, be issued every 4 weeks instead of every 2 weeks. The meaning for pilots is that we will have to be extra careful in checking the NOTAMs before a flight, since the radio facility charts will be more out of date. — *Flight Service Bulletin.*



"This door won't open in flight, see-e-e-ee"

The F9F-8T Passenger

ONE OF the easiest read and most informative brochures available to jet flight passengers today is the preflight guide prepared by the Grumman Aircraft Engineering Corp. Although it was intended primarily to orient Grumman personnel as jet flight passengers its reading by prospective Navy passengers is highly recommended. Its reading will make the pilot's job of preflighting his passenger simpler, and better understood.

Its contents include an explanation of the reasons for the flight physical examination, dressing for flight, survival gear, entering the aircraft before flight, how to check the cockpit equipment you will use in flight, sensations in normal jet flight and emergency procedures.

Limited distribution of this booklet has been made to Navy users.

For additional copies see your Grumman Tech Rep or write Grumman Aircraft Engineering Corp., Beth Page, New York.

Airways Modernization Program

Due to the extensive Airways Modernization program currently in effect until 1 July 1959, various navigation facilities may be inoperative and airways, MEAs, etc., are subject to vary from the appropriate information shown in this publication. CAA NOTAMs are published to cover temporary conditions not shown in this publication. Pilots are advised to contact Flight Service and/or CAA stations regarding any doubtful status of airways or enroute navigation facilities.

Answers to "Chopper" Quiz, Page 21

1. C 2. False *3. A 4. C 5. B 6.* False *7. B 8. C 9. C 10.* True (See *"Headmouse"* page 18, Feb '58 APPROACH.

Good show...

Units which have compiled enviable records of accident-free flight operations are deserving of high commendation. In response to APPROACH's request for self-nominations, the following commands have proudly made their records known, and APPROACH is proud to tip its hard-hat in their direction. The invitation still stands—if your command has a safety record to be proud of, send it in and 28,000 copies of APPROACH will carry your story.

THREE training units of CNAVanTra, ATU-102 at NAAS Kingsville, ATU-104 at NAS Memphis and ATU-107, at NAAS Cabaniss Field, all flying T-28's, succeeded in establishing the first perfect safety record by Navy Student Pilots.

During the period from 1 August 1956 to 4 August 1957 a total of 1229 students flew the trainers for a total of 72,348 accident-free hours.

THE NAVAL Air Training Command flew 76,500 hours in December 1957 with only four major aircraft accidents for a rate of .52 accidents per 10,000 flying hours, the lowest monthly rate on record for a major command. This record low rate can only be attributed to the outstanding efforts and cooperation of all hands. Congratulations on a job well done. The Chief of Naval Air Training extends his personal well done to all concerned. — *S/VADM Goldthwaite, CNATRA.*

"IN SEVEN years of flying in all types of weather the "Codfish Airline" in the Pacific has never lost a passenger, crewman or pilot, and that seems a safety record of which the Navy can be proud."—*American Aviation*

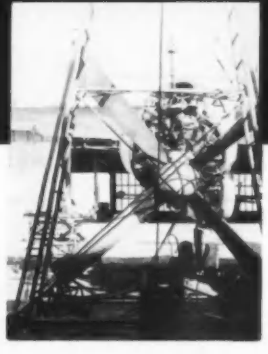
ON 11 January 1958 Marine Air Training and Replacement Command (MCAS Cherry Point), AirFMFLant completed 12 consecutive aircraft accident-free months. This is first time any of the three major commands of AirFMFLant has flown an accident-free year. This record obtained while operating a variety of eight different model aircraft, jet and prop, single and multi-engine for approximately 16,600 hours. This record is most commendable and establishes a high goal for all units to shoot for. A very Well Done to the Commanding Officer Marine Air Training and Replacement Command, AirFMFLant and all officers and enlisted men whose combined effort made this record possible.

IN NOVEMBER, 1957 ATU-206, Forrest Sherman Field, Pensacola logged its 10,000th accident-free flying hour. ATU-206 employs nearly 100 jet fighters, flys an average of 140 sorties daily, the 10,000 accident-free hours were amassed over a period of 97 calendar days.

BTG-1, NAAS Saufley, has set a mark of 26,544 consecutive accident-free hours of syllabus flying time.

Contributing largely to this record were training squadrons VT-14 and VT-15, which flew 11,216.6 and 10,771.2 accident-free hours respectively.

BTG-1 stresses ground and flying safety at its weekly conferences with squadron commanders and safety officers, reviews Navy accident statistics and makes full use of safety training aids in the form of posters, displays and lectures. Full cooperation of all flight personnel at Saufley was the necessary ingredient for achieving the high number of accident-free hours, said Cdr. Wm. Davidson, NAAS Saufley Aviation Safety Officer.



This Issue . . .

Pomola—An introduction to the latest device for keeping landings on the runway; and there's no waiting—it's a do-it-yourself item!

Flameout—An experienced power plants officer discusses some causes, symptoms and remedies for "that awful silence" that comes when the big torch goes out.

Practically and Tactically—A young Marine fighter pilot expounds on the fact that tactics must be practiced *now*, and not when you have a pack of bogies cornered at six o'clock.

Over the Side—When a ship turns, anything that's not tied down will try to keep going straight ahead. An unprepared for turn can send an airplane over the side and a human life as well.

Truth and Consequences — Running into your own gunfire takes some speedy flying, but even the old faithful AD can get bumped by its own rockets when they ricochet off the hard ground.

Anymouse—"It all started when I dropped my cigaret; it was lit. But that wasn't so serious, I had nearly half a pack left . . ."

Monitor—"When the blue chips are on the table, don't play unless you have the cards," said a well-known admiral to an area Safety Council meeting.

Notes from Your Flight Surgeon—"Save the picture-taking for beer busts", says Doc, "flying an AD at low level is no place for snapshooting, even if your shoulder harness *is* secured."